

NUCLEAR REGULATORY COMMISSION

Title: Advisory Committee on Nuclear Waste
154th Meeting

Docket Number: (not applicable)

PROCESS USING ADAMS
TEMPLATE: ACRS/ACNW-005

Location: Rockville, Maryland

Date: Wednesday, October 20, 2004

Work Order No.: NRC-069

Pages 1-96

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UNITED STATES NUCLEAR REGULATORY COMMISSION'S
ADVISORY COMMITTEE ON NUCLEAR WASTE

October 20, 2004

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON NUCLEAR WASTE
(ACNW)

154TH MEETING

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WEDNESDAY,

OCTOBER 20, 2004

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ROCKVILLE, MARYLAND

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The Advisory Committee met at 10:00 a.m.
in the Auditorium of the Nuclear Regulatory
Commission, Two White Flint North, 11545 Rockville
Pike, Dr. Michael T. Ryan, Chairman, presiding.

COMMITTEE MEMBERS PRESENT:

MICHAEL T. RYAN, Chairman

JAMES CLARKE, Consultant

ALLEN G. CROFF, Member

RUTH F. WEINER, Member

ACNW STAFF PRESENT:

JOHN T. LARKINS, Executive Director

MICHAEL LEE

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ACNW STAFF PRESENT (Continued):

LATIF HAMDAN

RICHARD K. MAJOR

ALSO PRESENT:

ROBERT L. JOHNSON

CHRIS MCKENNEY

JAMES L. RUBENSTONE, Ph.D.

KING STABLEIN

MARK THAGGARD

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P R O C E E D I N G S

(10:08 a.m.)

CHAIRMAN RYAN: Good morning. The meeting will come to order, please.

This is the second day of the 154th meeting of the Advisory Committee on Nuclear Waste.

My name is Michael Ryan, Chairman of the ACNW. The other members of the committee present are Ruth Weiner and Allen Croff.

During today's meeting the committee will hear an update on the status of the license termination rule from the NRC staff, receive an update on the consolidated issues resolution status report from the NRC staff, and continue its discussion of potential topics for inclusion in the 2005 ACNW action plan.

Mike Lee is the designated federal official for today's initial session.

This meeting is being conducted in accordance with the provisions of the Federal Advisory Committee Act. We gave received no written comments or requests for time to make oral statements for members of the public regarding today's sessions. Should anyone wish to address the committee, please make your wishes known to one of the committee's

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1 staff, and it is requested that speakers use one of
2 the microphones, identify themselves, and speak with
3 sufficient clarity and volume so that they can be
4 readily heard.

5 Our opening presentation today is an
6 update on the status of the license termination rule,
7 and Robert Johnson is here to make that presentation.

8 Welcome and thank you for being with us.

9 MR. JOHNSON: Okay. Thank you. It's a
10 pleasure to be here. I just have to get my mic
11 situated. I guess that will give me some flexibility.
12 Can everyone hear me?

13 Okay. I'm going to try to use this
14 advancer, but if I skip ahead real fast, let me know.
15 Like that, yeah. It's really touchy.

16 Okay. Just an outline for this morning's
17 briefing. It has been, I think, since May of 2003
18 that I briefed you last on the license termination
19 rule issues, and at that time it was the results of
20 our analysis, and so I want to go through some
21 background just to fill in the gap in time, and there
22 are some new folks that may not have had that
23 background.

24 I'd like to talk about accomplishments in
25 FY 2004, and our plans for upcoming activities during

1 2005 to 2007 with respect to the LTR analysis actions.

2 And then just to give you some more in
3 depth idea of how we're implementing some of the
4 actions, we'll go through a couple of site specific
5 examples.

6 And then lastly, to end it, we'll throw
7 out some ideas for potential ACNW reviews of our
8 future work, and maybe we can discuss and get some
9 feedback from you on what you might feel would be
10 useful and of interest to you.

11 Okay. A little bit of background on the
12 LTR, but before I guess I do that I should say that
13 the LTR work past and future has always been a team of
14 people working on, as you can tell, a variety of
15 issues, and some of those people are in the audience
16 today. So for some of the examples that I might talk
17 about if you have detailed questions that I can't
18 answer, I'll have some help hopefully from the
19 audience, and that way we can hopefully address the
20 questions that you might have.

21 Going to the background though, the LTR
22 analysis of the eight issues, the Commission paper was
23 done in May of '03 and then we briefed ACNW also in
24 May of '03. The Commission approved the actions for
25 the eight issues in November of '03, and then there

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1 was a ninth issue on intentional mixing of soil. That
2 analysis was completed in March. The Commission
3 approved the actions for that particular issue in May,
4 and then as you recall, the ACNW was briefed this
5 summer in July on that particular issue.

6 So that sort of fills the gap a little bit
7 about where we've been since we briefed you last. Now
8 I'd like to turn to accomplishments in FY '04, and
9 these are the actions that really follow what we have
10 in the budget. We're basically still following the
11 original plan we had in the SECY paper for those
12 activities that have been budgeted, and even the
13 planned activities that I'll talk about later are
14 those that have been and continue to be budgeted.

15 And that means their schedules are the way
16 they are because of the budget that we have.

17 Of course, accomplishments in '04 was the
18 completion of the Commission paper on intentional
19 mixing, and then the Commission approval of all the
20 staff's recommendations. I'll go over those in a
21 minute. A couple of my slides coming up kind of
22 remind you what the nine issues were, and then issue
23 by issue I'll just sort of touch upon, you know, what
24 the Commission approved and maybe some of the comments
25 that they had. They had a few comments relative to

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1 some of those issues.

2 So that will be sort of a refresher on
3 what the issues were or what the issues are and what
4 the Commission had to say about them.

5 The other major accomplishment this year
6 was the completion of the regulatory issue summary, or
7 the RIS, as we call it. I'll talk about that a little
8 more in a moment.

9 And then lastly the accomplishments
10 focused on some site specific implementation relative
11 to institutional controls and realistic scenarios, and
12 those are the examples that I'll talk about later in
13 the presentation.

14 Let's look first at the regulatory issues
15 summary published this past May, and its purpose was
16 really to inform licensees and stakeholders of the LTR
17 analysis results. It basically boiled down 130 pages
18 of the staff Commission paper into about 13 pages.
19 That was maybe a little easier for people to kind of
20 read in one sitting, and if they are interested, then
21 they can go and get more detail.

22 It also identified opportunities for
23 stakeholder comment and invited early feedback as we
24 proceed with some of our activities. It summarized
25 the analysis that the staff had done for the nine

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1 issues all combined. Since the eighth and ninth one
2 on mixing were separated in time we wanted to wait for
3 the RIS and combine all of the issues together so that
4 it would be easier for stakeholders to have one
5 document that was short, hopefully digestible and
6 under one cover.

7 The RIS then also includes the Commission
8 approvals and any comments that the Commission had
9 relative to each issue. So people could get a whole
10 picture, you know, in digest form of the analysis and
11 the results of the Commission's comments.

12 The RIS was really a final action for two
13 of the issues. The .05 weight percent not being used
14 as a decommissioning criteria was one of the issues
15 where we just, you know, completed our work and
16 described and gave that conclusion in the RIS.

17 And then the issue on developing a
18 separate uranium and thorium standard was also -- just
19 the whole description of that, you know, was completed
20 and documented in the RIS, and there's no further
21 actions planned for either of these two issues.

22 The Commission also approved the staff
23 recommendation to begin implementing approved options
24 for institutional controls and realistic scenarios and
25 not wait for the actual draft guidance to be developed

1 to begin working on those issues, and that's
2 particularly for institutional controls for licensees
3 that may express an interest in using those. We do
4 not want it to delay decommissioning progress and
5 wanted to proceed with those where there was a desire
6 by licensees.

7 Bear with me. Okay. I'll just go down
8 each of the nine issues here in brief and start with
9 institutional controls, and the Commission approved
10 the recommendations for a risk-informed, graded
11 approach, some new options for NRC monitoring and
12 enforcing under the LTR, and particularly that's under
13 a legal agreement, and a deed restriction where NRC
14 would be mentioned in the deed restriction. That's
15 one new option.

16 The second new option is the long-term
17 control license that I'll talk about more in a minute.
18 So the Commission approved those new options, but in
19 particular, they requested public comment on the draft
20 guidance, and those comments be shared with them
21 before the guidance was finalized. So they're very
22 interested in what stakeholders will think about these
23 issues, and of course, our plan for developing the
24 guidance will include we have to make time to prepare
25 a Commission paper that will share the comments with

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1 the Commission that we get on particularly
2 institutional controls, but probably other issues as
3 well if we have comments.

4 With respect to the issue on unimportant
5 quantities, the Commission approved the recommendation
6 of the staff that the .05 weight percent is not to be
7 used as a decommissioning criterion.

8 Similarly, the Commission approved the
9 staff's recommendation that a separate uranium and
10 thorium on restricted release standard should not be
11 developed.

12 And then with respect to the issue on on-
13 site disposal standard, the Commission approved the
14 staff's recommendation to use the current practice of
15 a few millirem on a case-by-case basis for approval.

16 They also approved another recommendation
17 the staff had to use up to 100 millirem as long as
18 there was sufficient financial assurance to cover the
19 difference there.

20 In addition the Commission commented that
21 we should add a third option of allowing 25 millirem
22 without financial assurance and for short-lived
23 radionuclides.

24 But the idea is that, yo know, there would
25 be decay to unrestricted levels probably within, you

1 know, a few years and, therefore, financial assurance
2 might not be necessary.

3 With respect to the next issue on
4 describing the relationship between the LTR and
5 control of disposition of solids, the Commission
6 approved our description in the RIS, asked us to
7 provide that in a RIS, but they also asked us to
8 clarify statements that were made in the SECY document
9 that reduction in conservatism in the LTR analysis
10 might have some impact on off-site use, and I'll
11 explain that briefly for a minute.

12 What we meant there was in past practice
13 it was believed that the on-site use using the default
14 resident farmer would probably bound any off-site use,
15 and so there wasn't a requirement to analyze off-site
16 uses.

17 When we came up, of course, with the more
18 realistic scenario approach, you know, the Commission
19 said, "Well, if you're moving toward more realistic
20 scenarios and away from the resident farmer, what
21 impact might that have?"

22 And so in the RIS we explained that the
23 realistic scenario approach should also consider if
24 off-site uses were reasonably foreseeable, in addition
25 to just on-site uses.

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1 So in coming up with, you know, an
2 identification of the critical group, the potential
3 for off-site use should also be considered, and if it
4 is, then you would analyze it. So the idea here is
5 that for realistic scenarios you should be covered
6 even if off-site uses are reasonably foreseeable.

7 So that was the approach that we explained
8 in the RIS, and we'll probably have some follow-up
9 guidance in the guidance base, you know, when we
10 develop this further.

11 That kind of leads into the next issue on
12 realistic exposure scenarios. The Commission approved
13 using the reasonably foreseeable land use approach
14 recommended by the staff.

15 Changes to financial assurance to prevent
16 future legacy sites. they approved our
17 recommendations to move forward with guidance and a
18 rulemaking, but some of their comments indicated that
19 they wanted us to, again, seek public comment on some
20 of the proposals that we had. And there were a number
21 of them.

22 I didn't plan on getting into those today,
23 but you can see what the comments were in the RIS and
24 see if you have interest in those, but they will be
25 incorporated into our proposed rule and our guidance,

1 and of course seeking public comment on those items
2 that the Commission wanted us to do that for.

3 The next one is changes to licensee
4 operations to prevent future legacy sites. The
5 Commission approved our recommendation for operating
6 facilities to minimize contamination, increase
7 licensee monitoring and reporting for high risk sites.

8 Now, along with that recommendation was
9 the idea that the staff would develop a risk informed
10 and performance based approach to identify sites that
11 might have a high risk or activities on site, that
12 might have a high risk of contamination, and therefore
13 causing future decommissioning problems.

14 Now, you might recall this issue. When we
15 looked at lessons learned, for the site we had today
16 how do we get here for some of these sites? The idea
17 is, well, you may have had chronic spills over a long
18 period of time that weren't detected or maybe they
19 weren't reported and our inspections, you know,
20 weren't looking for those things.

21 And so the goal here is to come up with an
22 approach that would identify those sites that we
23 should focus -- that licensees should focus their
24 attention on and maybe have more monitoring and
25 reporting, if necessary.

1 And then for NRC we would focus
2 inspections on these facilities or on the activities
3 in the facilities to try to prevent any activities
4 that might create future decommissioning problems.

5 The Commission did have a comment though,
6 I guess, when we developed guidance on monitoring
7 requirements. The point of how much of monitoring is
8 enough for this particular case, and so they want us
9 to be careful with that and be limited in our data
10 requests and look carefully at how much is enough, but
11 don't go overboard. That's how I read their comment.

12 You can appreciate that, I think, and
13 we'll address that in guidance development.
14 Intentional mixing, you heard from that recently.
15 They approved the current practice of mixing to meet
16 waste acceptance criteria. They approved the staff's
17 recommendation for meeting the LTR criteria in limited
18 circumstances and on a case-by-case basis.

19 Okay. Let's move ahead to what's on the
20 horizon. What's coming up in '05 to '07? You may
21 have heard this before, but basically the first part
22 is to develop decommissioning guidance, to revise
23 guidance in the NUREG 1757. It would focus on four
24 issues: institutional controls, on-site disposal,
25 realistic scenarios and intentional mixing.

1 So we'll follow up and expand upon the
2 work in our commission papers to develop draft
3 guidance for public comment.

4 We're looking to stakeholder involvement.
5 We want to explore the grievant statement, for
6 instance, participation and development of the
7 guidance very similar to what was done for NUREG 1757.
8 We found that very useful and valuable, both helping
9 us out, but also helping out those agreement states
10 that participated.

11 And we're expecting some form of early
12 stakeholder input and possibly a meeting or workshop
13 are that follows on recommendations from the committee
14 on intentional mixing, that it would be useful to get
15 feedback from licensees that might use this material
16 up front, before we start developing guidance.

17 So we do intend to do that. Exactly how
18 many and when, you know, we have to work out.

19 And then the draft guidance is supposed to
20 be provided or published in September of '05 and a
21 final in '06.

22 Looking ahead to an activity that's
23 planned for FY '05 principally, the inspection and
24 enforcement procedures for operating sites, and this
25 is what I just talked about a little bit. It will be

1 focused on enhancing monitoring reporting, itemizing
2 contamination, developing this risk informed approach,
3 identifying those sites and then writing the revised
4 procedures, and that will be during the course of this
5 year.

6 The other activity that's planned is
7 developing a rulemaking and supporting guidance for
8 those two issues that relate to preventing future
9 legacy sites, and these are the changes in financial
10 assurance that we have in mind, changes in licensee
11 operations that I just talked about.

12 And right now, even though we will be
13 starting that proposed rulemaking this year, it's
14 scheduled for publication in '06, and then a final
15 rule and guidance in '07.

16 Now I'd like to move on to some specific
17 examples. First, with respect to institutional
18 control options, at the Shieldalloy site in Newfield,
19 New Jersey, and just a little bit of background.

20 This is a site, like I said, in Newfield,
21 New Jersey. It used to be and still is a
22 manufacturing facility for specialty steels and super
23 alloys, aluminum alloys. In the past they processed
24 ore containing columbium, which they used in their
25 alloy process.

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1 Well, the ore also contained uranium and
2 thorium. So when they went through a smelting process
3 to separate out the columbium from the rest of the
4 material, they ended up with slag that contained
5 uranium and thorium in amounts greater the .05 weight
6 percent. So they became a licensed process and
7 facility.

8 And what they have right now is about a 68
9 acre site made up of eight acres of storage yard where
10 the slag pile and bag house dust pile is, and then the
11 rest of their 60 acres, that's where their current
12 manufacturing facilities, buildings are located, and
13 they're right outside of Newfield, a small town, you
14 know, across from a bank, and there's residential
15 areas nearby. There's other industrial areas nearby.
16 There's farming, you know, adjacent to their site. So
17 it's a mix, and they're right on the outskirts of a
18 small town, maybe 1,500 people. So they're an
19 industrial facility, but they have a lot of variety of
20 land use surrounding them.

21 Well, this is a few years ago when they
22 first submitted their decommissioning plan for
23 restricted release, but it was reviewed and rejected
24 by the staff. They had at that time no acceptable way
25 for providing long-term institutional controls or the

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1 financial assurance that needed to go along with it or
2 the public involvement that's required by the license
3 termination rule for these kind of sites. So those
4 were the reasons for why they were rejected.

5 Rejection came at about the same time that
6 our SECY paper came out with options like the long-
7 term control license, and so Shieldalloy expressed an
8 interest in trying out the long-term control license,
9 and so it certainly serves as a first example of
10 applying the risk informed, graded approach and
11 applying the long-term control license, and that's why
12 I wanted to use it as an example today.

13 Well, one other bit of background that I
14 just overlooked in my notes is just for a perspective
15 general round figures. The amount of slag they have
16 is about a million cubic feet of slag of bag house
17 dust, and by their estimates, it would cost about \$100
18 million for off-site disposal in contrast to, again,
19 their estimates that will be revised when they
20 resubmit their DP, but around five million for leaving
21 it on site with restrictions on use. So there's quite
22 a contrast in cost and also they have had a history of
23 bankruptcy. They have a similar site in Cambridge,
24 Ohio that they came out of bankruptcy and had an
25 agreement to, again, use restricted release and build

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1 disposal cells on the Cambridge site, again, with the
2 similar slags, similar process, and everything.

3 So Ohio being an agreement state, you
4 know, there's sort of a parallel approach here, and
5 we, in fact, drew upon some of the experiences that
6 Ohio had with their intent to use the decommissioning
7 possession only license for that site in Cambridge.

8 So we have sort of a parallel process and
9 examples going on here. In any event, ShieldAlloy
10 needed guidance to prepare their revised
11 decommissioning plan, particularly for the long-term
12 control license. So we moved forward to prepare some
13 interim guidance in May of '04, and we expect that
14 this interim guidance will evolve and we'll fold it
15 into our draft regulatory guidance in '05.

16 This interim guidance, as I'll talk about
17 in a minute, contains some basic concepts because the
18 understanding as we worked with Shieldalloy and
19 others, the understanding of this possession only,
20 long-term control license was new, and it was sort of
21 we were trying to explain it and get the idea across.

22 And so concepts are important to grasp
23 first, and we included that in the interim guidance,
24 and then we included section by section in the
25 decommissioning plan, what information they needed to

1 submit when they resubmitted their guidance.

2 I should mention here that the interim
3 guidance and the interest that Shieldalloy has in
4 using it has certainly got the attention of the State
5 of New Jersey. They've written two letters to the
6 Chairman saying that they object to restricted use
7 they object to the long-term control license, and they
8 believe the policy is sort of a first of a kind
9 experience in kind of a proving ground, you know, for
10 something that's new that has been untried.

11 And the first letter the Chairman
12 responded, emphasizing that the LTR allows the
13 restricted use option, assuming that the licensee can
14 meet the requirements in the license termination rule,
15 and that's an important point, you know. This is an
16 option that they have proposed to use, and they still
17 have to submit their decommissioning plan. They have
18 to still demonstrate to us that they have met the
19 requirements, and we would have to review those, that
20 demonstration, and approve it.

21 So there's nothing approved. It's just
22 that we're moving forward with trying out this option
23 at this point in time.

24 But the Chairman also emphasized that the
25 long-term control license would enhance the long-term

1 control because the federal government stays in the
2 picture. NRC stays in the picture.

3 So that's an enhancement to long-term control,
4 and the fact that the policy is untried and so forth,
5 we pointed out in our response that really the
6 development of license was based on the ten years of
7 general license experience for the mill tailings
8 program. It was also based, like I said, on the State
9 of Ohio's intent and experience to use a similar
10 license.

11 CHAIRMAN RYAN: Robert, just a quick extra
12 point on that last bullet.

13 MR. JOHNSON: Yes.

14 CHAIRMAN RYAN: I think it strikes me,
15 too, that -- there you go, that one, the last one
16 there -- that not only is there long-term control from
17 the licensing standpoint, but there's also I would
18 think from the state's perspective involvement for
19 financial assurance.

20 You've talked a little bit about that
21 already, and I guess my own view is that that's a
22 significant increase, and it's probably a more
23 realistic treatment of financial assurance and
24 disposal cost monitoring and all of the things you've
25 mentioned.

1 Is that a fair summary on my part?

2 MR. JOHNSON: Yes, and it's one of the
3 concepts I'll get into in a moment in a little more
4 detail, but that goes hand in hand. It's not only who
5 stays, but who's going to pay.

6 CHAIRMAN RYAN: Right.

7 MR. JOHNSON: How are they going to do it
8 and, you know, that's how it's going to work in the
9 long term if the funds are available, and how are they
10 available?

11 And of course, the state was concerned
12 about bankruptcy and ownership, and I think the
13 Financial Assurance Trust Fund approach is an answer
14 for that, and we explain that in our response back to
15 them.

16 But you can see that this issue, of
17 course, plays out across the country. A lot of the
18 same concerns are being raised, and this is our answer
19 to those.

20 DR. CLARKE: Robert, I think you said
21 originally that when they submitted their
22 decommissioning plan it was rejected, and one of the
23 reasons it was rejected was the financial assurance
24 piece. Is that because the options that they now have
25 weren't in place or they still have to come up with

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1 financial assurance, do they not?

2 MR. JOHNSON: Their original DP did
3 recognize they needed financial assurance for the long
4 term part of it. It was the amount, you know, that
5 was determined, and of course, that's part of the
6 picture, you know. What's the cost estimate for the
7 long term? And then how do you calculate the fund
8 based on that?

9 And so that was one of the comments that
10 we had back to them, and they know they'll have to
11 revise that based on our guidance.

12 DR. CLARKE: And while I have you, will
13 the new guidance help them with that calculation?

14 MR. JOHNSON: Yes, it will. Yeah, just to
15 answer it now, it's based on what's your cost estimate
16 for annual activities, you know, whether they be
17 surveillance, any maintenance or repair, or any
18 monitoring if monitoring is needed.

19 So that annual cost, the licensee will
20 need to lay out those activities and lay out the cost
21 of those activities and then look at the annual cost
22 of them.

23 Then the fund amount is calculated based
24 on one percent of the interest income off of that fund
25 needs to pay for that annual cost of whatever

1 activities are planned. And we ask them to assume one
2 percent annual return interest income, and that's
3 consistent with what uranium recovery sites us under
4 Part 40, Appendix A.

5 DR. CLARKE: Thank you.

6 MR. JOHNSON: Because they're long-term
7 sites, too. So we figured we should be consistent
8 with their approach.

9 Okay. Some of the key concepts, to get on
10 the right page here. First and foremost is the
11 current license that exists. Our plan right now is to
12 amend that current license, not terminate it and start
13 a new one.

14 That may sound like a housekeeping thing,
15 you know, and certainly it sounds better if you're
16 going to terminate the license. Essentially we are,
17 but when you terminate the license our agency records,
18 the docket file gets stopped and a new one is set up,
19 and we felt that there's an advantage to keeping the
20 agency records all together in one docket file for the
21 long term.

22 You know, anything can happen, and things
23 can get divided up and separated and possibly
24 confused. It's important to have the site history in
25 the docket file that exists today to be continuous,

1 you know, with the future files that will be kept
2 during the course of this if it should proceed.

3 Well, of course, having a liense changes
4 NRC's role. The original LTR did not contemplate NRC
5 role. So this is a new role I'll talk about in a
6 moment.

7 The second concept is people really need
8 to understand we're not just continuing the current
9 situation, you know. All of the requirements in the
10 LTR for restricted release have to be met, and there's
11 requirements for financial assurance. There's
12 requirements for public involvement.

13 Of course, there's the dose criteria
14 requirements both with controls and without controls.
15 They all have to be met, and so really what does the
16 license do? The license satisfies the requirement for
17 a legally enforceable institutional control. So the
18 license is the institutional control. It's a form of
19 government control.

20 But keep in mind they have to meet all of
21 the other requirements as well, and the eligibility
22 requirements. They have to show that restricted
23 release is as low as reasonably achievable. So all
24 of those requirements haven't changed. They're not
25 getting off or anyone who has used this is not getting

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1 off with, you know, less clean-up. They have to meet
2 the requirements that have existed in the LTR.

3 Look at roles. The licensee's role here
4 is clearly to provide the controls on access to the
5 site and land use in the future, to provide the
6 surveillance, the maintenance if needed, monitoring if
7 it's needed, any repairs, reporting to NRC and local
8 communities, records retention for their records, and
9 stakeholder involvement. The LTR requires that up
10 front to involve stakeholders, particularly where a
11 restricted release institutional controls are
12 provided.

13 What's the NRC's role? Well, it's nothing
14 really new. It's our typical oversight to assure
15 licensee's controls are effective. We would include
16 inspections. We would include what we call five-year
17 renewals. So that's similar to the five-year review
18 process that is required in the LTR for durable
19 institutional controls and similar to EPA's five-year
20 reviews.

21 We just would call it a five-year license
22 renewal process. We of course could also do
23 enforcement, and we would also provide all of the
24 maintenance of all the records for the license, like
25 I said, past and present, past, present and future.

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1 And they're available just like records are today to
2 any stakeholders.

3 Another key concept that was difficult to
4 work out was maintaining the current site -- the
5 license would maintain the current site boundary, but
6 within it, you would have a restricted area probably
7 like the eight acre area that I talked about where the
8 slag pile is, and then you would have 60 acres of
9 unrestricted use area. But it would still be under
10 the license.

11 And the reason that we have for keeping it
12 that way is that the unrestricted use area could be
13 used for industrial purposes or whatever purposes
14 would be decided, but we would want to make sure that
15 if there was monitoring needed in that outside area,
16 that that monitoring would be maintained.

17 We would also want to make sure that NRC
18 has prior approval of any sale of the property, and
19 that the site, the whole site, could not be split up
20 and let's say parts of the unrestricted use area sold
21 off, thus leaving a small appendage of the restricted
22 use area.

23 And we feel this approach, you know,
24 should assure ongoing monitoring, but it also should
25 assure ongoing protection of the whole property by the

1 licensee, and we feel that that will also maintain the
2 value of the site.

3 The unrestricted area currently has
4 manufacturing facilities there, and it has railroad
5 spurring. There's a lot of value in that property, in
6 the unrestricted area for future use. And that will
7 maintain the value of that piece of property, and it
8 will insure or it will help insure future sale of that
9 property.

10 Obviously it's going to change hands as we
11 go into the future, and so maintain ownership,
12 especially at the private sites like this, I think
13 it's an interesting question. How do you maintain
14 that?

15 I sort of skipped ahead to that bottom
16 one. I'll come back to financial assurance in a
17 minute, but I just wanted to make sure I got all of
18 those points, and maintaining ownership and control.

19 I said prior approval of transfers. Well,
20 that's also to make sure that the future owner who
21 will become a licensee may have to agree to become a
22 future licensee or they won't be a future owner in
23 this case, but that they also have the capability, the
24 expertise to continue the monitoring, maintenance,
25 whatever work has to be done, you know, for the

1 restricted part of the site.

2 There's always a question with transfer of
3 ownership. What if the owner can't perform the
4 activities? Maybe there's bankruptcy, some
5 abandonment or whatever.

6 We addressed that in the guidance as best
7 we could, but we certainly found that this was a new
8 area for us to think about. So maybe all of the
9 answers aren't out here yet, you know, We may learn
10 more in this area.

11 But we have to be reminded that
12 enforcement authority for the licensee regardless of
13 where they are. They can be sought after.

14 In the event that the licensee isn't
15 around to perform the activities, a couple of things
16 could be done. The trustee, which is the financial
17 trustee -- they're holding the funds. Okay? -- could
18 be directed to seek a contractor to continue the
19 monitoring and maintenance.

20 NRC might also have another option of
21 having a court appointed custodial trustee set up,
22 different than the financial funding trustee.

23 So it sort of gets complicated, but it's
24 an important point. You know, you've got to think
25 about these things for sites that are going the long

1 term.

2 Going back to sufficient financial
3 assurance and trust, I think I already maybe talked
4 mostly about that, but it is based on the annual cost
5 estimate that will be in the decommissioning plan, and
6 the LTR. One of the requirements is sufficient
7 financial assurance, and so that will be one of the
8 requirements, and that will be one of the things that
9 we and other parties, stakeholders will review.

10 And stakeholders are required to or not
11 required, but they're invited to provide their
12 comments on the sufficiency of the long-term costs,
13 you k now, for this. So the licensee, in case
14 Shieldalloy in this case, will need to address that
15 with her stakeholders and get whatever advice
16 stakeholders might have, including the State of New
17 Jersey and other affected parties.

18 But we feel the trust fund is an important
19 mechanism to provide for that annual cost, including
20 our fees. Whatever fees we have, we do inspections
21 for the five-year renewal. We've given them guidance
22 on what we think our activities would cost in fee
23 space to add into their own cost and add into the cost
24 of having a trustee, financial trustee.

25 And so that's our current approach. We

1 would expect that that information would be revised by
2 Shieldalloy when they resubmit their DP.

3 This site we use the risk informed, graded
4 approach to institutional controls. It's kind of a
5 simple example for using that. In the first part of
6 the graded approach is that based on hazard duration
7 and hazard consequence, you would determine if you
8 would use kind of routine, legally enforceable
9 controls or whether you would be able to justify
10 durable institutional controls, for instance, federal
11 ownership or federal control. In our case under the
12 license it would be federal control.

13 We felt in our approach that sites with
14 long-term radionuclides, uranium and thorium, that's
15 part of the justification for needing durable controls
16 because it's long-term control that you're looking
17 for, you know, over hundreds of years, and therefore,
18 a durable form is needed surely based on the duration
19 of the hazard.

20 Now, we'll also see the results in their
21 revised DP on the dose results. I don't know those
22 yet. We'll see what their remodeling comes up
23 with, but you know, they're required to analyze and
24 come up with a dose assuming controls fail, and so
25 based on those dose estimates, that could also justify

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1 the durable controls.

2 Part of the risk-informed approach is for
3 the licensee to tailor controls to their particular
4 site, to mitigate potential failures that they see as
5 being reasonable both for institutional controls and
6 engineered barriers.

7 Certain conditions, therefore, would be
8 kind of put into the license to particularly monitor
9 or do surveillance, you know, for those things that we
10 think could fail, and that would be significance of
11 performance.

12 A lot of things can happen to the site,
13 but part of what asked Shieldalloy to do was use
14 sensitivity analyses and try to determine which of
15 these things that could happen, could fail, would be
16 important to meeting the dose criteria.

17 So in that sense it's performance based.
18 In that sense it's using the results of dose
19 assessments, and it's therefore risk informed.

20 We'll see how all of this plays out in the
21 DP because it will be an example, you know, for all of
22 us to review and see how they approached it.

23 Looking at engineered barriers, that was
24 another concept that we talked about in the guidance.
25 We've indicated they need to evaluate the contribution

1 of any engineered barriers that are used to
2 compliance. Again, they should be using sensitivity
3 analyses.

4 The slab being uranium and thorium, the
5 thorium is the primary risk here for direct exposure.
6 So shielding in a cover, you know, for the long term
7 might be important, and then how could that shielding
8 fail. Could it erode and expose the slag?

9 And therefore if that's true and that's
10 important, then erosion control would be important for
11 them to design and implement.

12 Another item we said that we did not feel
13 that they should rely on whatever engineered barriers
14 they had. They should not rely on active, ongoing
15 maintenance and repair. They should be robust; they
16 should be passive; they should be more like covers
17 used maybe for mill tailing sites. That's what a goal
18 should be.

19 Because part of the analysis is to assume
20 failure of institutional controls, and when you assume
21 failure of institutional controls, then your
22 maintenance goes away. Any monitoring or any
23 surveillance and maintenance goes away, and you would
24 have to analyze how any barriers you use would degrade
25 over time.

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1 So if they degrade quickly and you can't
2 meet the dose criteria, then you've got to see how to
3 make them more robust and not as dependent on
4 maintenance.

5 Last, here on finality, this is an
6 important concept that's already in the license
7 termination rule. It's important to industry that
8 when we're done and terminate a license, we're done.

9 And the statement you might remember is in
10 1401(c) indicates that future clean-up would only be
11 done if there was a significant risk, if there was a
12 significant risk to public health and safety.

13 And that concept and our guidance, we said
14 that concept still applies to this long-term control
15 license. so that people that might worry, well, it's
16 still under an NRC license. Maybe they will want to
17 have more clean-up done in the future, and we feel
18 that finality is important in that concept that's
19 already in the license termination rule is also
20 important to this kind of a site.

21 I was going to move on to realistic
22 scenarios now. If you had any questions on
23 institution controls in this example, we could either
24 do them now or do them afterwards. It's up to you.

25 CHAIRMAN RYAN: I'd say keep rolling.

1 MR. JOHNSON: Okay. Keep rolling. Okay.

2 Shifting into examples for implementing
3 the realistic scenario approach, I just lifted here
4 this year 11 decommissioning sites that are in various
5 stages of implementing the realistic scenario approach
6 that was in the LTR analysis.

7 As you'll see, we've got two power plants
8 at the end and we have West Valley, and then the rest
9 are material sites. Some of these examples I would
10 say when completed are going to be good case studies.
11 They're going to be good lessons learned, you know,
12 for other licensees to look at and see if it's similar
13 to their situation.

14 But of course, all of these are site
15 specific, but I think they do illustrate approaches,
16 in general.

17 The first one I wanted to look at was
18 Fansteel, and this is a facility located in Muskogee,
19 Oklahoma. It processed ores that also contain uranium
20 and thorium. In 2002, they filed for bankruptcy, and
21 their goal is unrestricted use. They're taking a
22 phased approach to decommissioning, and they have very
23 limited funds, of course, because of the situation
24 they're in.

25 They proposed use of an industrial

1 scenario as a reasonably foreseeable land use, and
2 this was based on primarily as I understand it the
3 Port of Muskogee on the Arkansas River, the sites on
4 the Arkansas River.

5 To the north adjacent to the site is the
6 Port of Muskogee and its facilities. The port is also
7 interested in purchasing part of the site in the
8 future to expand their facilities.

9 Like I said, the Arkansas River is on the
10 east bordering the site, and then you have highways on
11 the other side of the site, and there's a fossil fuel
12 plant across the river.

13 And so the staff reviewed the licensee's
14 proposal, followed up with the port and its interest
15 in purchasing and expanding its facilities in the
16 future, and so the staff supported the use of the
17 industrial scenario by the licensee.

18 However, the State of Oklahoma challenged
19 that decision and proposed that a resident farmer,
20 primarily a resident farmer scenario might be more
21 appropriate because there are farms in the area,
22 across the river and all.

23 The Atomic Safety Licensing Board reviewed
24 the licensee and staff's analysis, as well as the
25 Oklahoma's basis and upheld the staff's decision for

1 the industrial scenario for that site.

2 So it serves as an example. Of course,
3 it's based on the reasons that were given at this
4 particular site, but it does illustrate an example of
5 using an industrial scenario, not a residential farmer
6 and having it challenged by a state and then having it
7 upheld by Atomic Safety Licensing Board.

8 The second example is Kiski Valley. This
9 is a non-licensee. It's a waste water treatment
10 facility in Pennsylvania. They treated sewage sludge
11 by incineration, disposed of the sludge ash in an on-
12 site lagoon. The contamination is enriched uranium
13 that came from a Sanitary sewer release from the B.W.
14 Apollo facility years ago.

15 So not being a licensee, part of the
16 process was for the staff to do a dose assessment,
17 which was done and then reported on in a Commission
18 paper.

19 The staff used reasonably foreseeable land
20 use scenarios. The staff felt that on-site, in place
21 in the lagoons, no action was the approach to analyze.

22 We used a recreational use scenario as a
23 river par, and the dose resulting was about one
24 millirem from that scenario.

25 But part of the realistic scenario

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1 approach is to consider input on land use from state
2 officials, land use planners, and in this case
3 Pennsylvania felt that a reasonably foreseeable
4 approach would be removal of the material for off-site
5 disposal.

6 Staff analyzed that as well, and the
7 worker excavation of the material would result in
8 about a 15 millirem exposure dose, and then the
9 landfill, initial disposal of landfill, was bounded by
10 another scenario that the staff did.

11 The staff did some less likely use
12 scenarios to kind of bound the uncertainty, and that's
13 part of this approach for realistic scenarios as well.
14 You would base compliance on what you think is
15 reasonably foreseeable, but there may be other
16 scenarios that you want to analyze to see, you know,
17 what's the result and the uncertainty.

18 The results of, I guess, the scenarios
19 that were analyzed here was an agricultural scenario
20 as well as a resident intruder, and both of those
21 resulted in about a 20 millirem does.

22 And so it was felt that the analysis of
23 the agricultural one on site would bound the disposal
24 in an off-site location. So you get an example here
25 of a number of things.

1 You know, what's reasonably foreseeable,
2 involving a state in this case also saying what they
3 think is reasonably foreseeable. And part of that was
4 an off-site use, and so it's not just on-site use.

5 If off-site use is determined reasonably
6 foreseeable, then it should be analyzed, and so this
7 example, I think, shows a lot of different aspects of
8 the staff's approach.

9 The Commission approved this commission
10 paper and moving ahead with no action, and so, you
11 know, it went through their review and approval, and
12 therefore, again, it's an illustration of this
13 approach that the staff is using for this kind of
14 site.

15 I'd like to end on kind of reminding you
16 where we were going in '05 and suggest that we think
17 it would be useful as we develop our draft guidance on
18 institutional controls and scenarios and mixing that
19 we involve ACNW in the review of that draft guidance
20 before it goes out for public comment.

21 The question would be, you know, when.
22 Our schedules aren't set up, and so this would be a
23 good time to, you know, think about it and give us
24 your feedback. It might be springtime, you know if
25 you think about doing some draft work and then meeting

1 with you and having you have time to review it and
2 give us feedback so that we can publish it by
3 September.

4 But here we are in October. So you know,
5 we can kind of divide up the year and see how we can
6 get the job done, if you feel that reviewing would be
7 something that's important and of priority to you.

8 The second thing that might also be of
9 interest and use to us is this risk informed approach
10 that I mentioned earlier for operating sites to
11 identify which operating sites or activities on those
12 sites would be considered high risk.

13 And how do we do that? How do we apply
14 it? How do we factor it into our procedures. It's
15 going to be interesting. It's new. To me it's not
16 something that we -- we don't often do this every day,
17 you know. So it would be useful, I think, to get
18 review of the staff's approaches or ideas from the
19 committee.

20 So those are two ideas to throw out for
21 discussion and for your thoughts, and if there is
22 interest, then maybe we can proceed with some more
23 details on schedules and you know, all of that as we
24 develop our plans in the next month of so.

25 And that ends my presentation, and any

1 questions, I'll try to answer any questions you might
2 have or seek help from those in the audience.

3 CHAIRMAN RYAN: Well, Robert, thanks for
4 a real informative presentation. I think we have a
5 really clear picture of where you have been and where
6 you are going. It sounds like an exciting time ahead
7 on the LTR.

8 I guess let's start right here at this
9 point. What's the path forward that we could be
10 helpful on? You know, when I think about our working
11 group meetings, for example, as you were talking, I
12 was thinking about from my own experience.

13 Are there any sites out there that have
14 been terminated in one way or another, not maybe under
15 the current LTR but other licensees that have
16 terminated activities that could be case studies now,
17 you know, some of the older history sites, not only
18 those licensed by the NRC or perhaps an agreement
19 state? I think there is probably a number of maybe
20 smaller licensees that have done those kind of
21 terminations. I just wonder if we could mine some
22 information there.

23 The second group I thought about -- and I
24 am just throwing out these ideas just as we're talking
25 here -- is the FUSRAP sites.

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1 MR. JOHNSON: Okay.

2 CHAIRMAN RYAN: You mentioned a couple
3 uranium thorium sites. So I thought immediately of
4 the FUSRAP sites as uranium-thorium-radium, you know,
5 type sites.

6 I think of the upstate New York area, for
7 example. And St. Louis has a cluster of them around
8 there. And they have been evaluated and addressed in
9 terms of not exactly license termination but the same
10 kind of finality sort of concept of being finished
11 with them and so forth. So that is something to think
12 about.

13 And, again, most of those wastes were
14 disposed and taken to Envirocare, but some was left
15 behind. It led me to think about, well, somewhere
16 along the line, there is a little bit of an overlap or
17 at least the LTR bumps up against decommissioning.
18 Where is that line, something to think about? You
19 know, if you had to take all the waste and remove it,
20 like the slag pile, you've decommissioned it.

21 MR. JOHNSON: Yes.

22 CHAIRMAN RYAN: So you're then in the
23 space of looking at that MARSSIM approach to saying
24 the residuals are okay, but if you leave something
25 behind, where do you stop thinking about MARSSIM and

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1 start thinking about LTR?

2 MR. JOHNSON: Okay.

3 CHAIRMAN RYAN: You know, it's kind of a
4 continuum, maybe not exactly, but it's just something
5 that I thought about.

6 So I guess with those couple of additional
7 ideas, it would be interesting to think about a
8 working group meeting, perhaps a day or something of
9 that order, where we could ask others to come in to
10 help us all.

11 And the folks I'm thinking about are folks
12 from perhaps those programs, the Corps of Engineers
13 and the FUSRAP side, other licensees who have
14 terminated activities in one form or fashion.

15 I can't think of the name of it, but there
16 was a thorium site in Chicago.

17 MR. JOHNSON: I don't know.

18 CHAIRMAN RYAN: Was it Kerr McGee
19 activity?

20 MR. JOHNSON: Anybody?

21 CHAIRMAN RYAN: West Chicago, the West
22 Chicago site.

23 MR. JOHNSON: West Chicago?

24 CHAIRMAN RYAN: And so, you know, again,
25 I'm just thinking off the top of my head here. I

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1 think there are maybe some other examples. And I
2 would just suggest that if we could bring in some of
3 those experiences, the real life experiences, that
4 might help inform us all a bit from a broad spectrum
5 of perspectives, touching on the issues that you
6 raised there and maybe getting their reaction and
7 asking them what works or doesn't work.

8 Looking ahead, I think about some of the
9 details that I know Chris and Mark wrestle with are
10 what do I do with an engineered barrier and how do I
11 credit it or discredit it, what is the right way to do
12 all of that?

13 So some of the details of how the staff is
14 going to assess a particular licensee's submittal and,
15 you know, what's the range of failure rate of caps,
16 for example, things of that sort that seem reasonable
17 and can be defended from the staff's point of view.

18 Let me just call it the technology of the
19 risk assessment or risk informing the assessment might
20 be an area where we could bring in some other folks
21 who have done a lot of that. I know Jim Clarke, one
22 of our consultants, has been very active in that area.
23 EPA probably has some folks or some practitioners who
24 have served on EPA sites that could give us some
25 insights there.

1 And, again, my reach is to try and say who
2 are the practitioners that have done good solid
3 credible work in real circumstances that we can draw
4 from?

5 Does that sound like at least a concept of
6 how to organize a day or so of a working group
7 meeting?

8 MR. JOHNSON: That sounds like a good
9 suggestion, lessons learned from other similar sites
10 that pertain to our current cases.

11 CHAIRMAN RYAN: Now, what the exact topics
12 are that you want to --

13 MR. JOHNSON: Right.

14 CHAIRMAN RYAN: -- prioritize as the
15 things we really need to know the most about, the
16 things we know the least about now. You know, we
17 could certainly work on that agenda.

18 MR. JOHNSON: Yes, yes.

19 CHAIRMAN RYAN: But that is just what I
20 was thinking about.

21 MR. JOHNSON: Another example of a
22 reaction is Ohio in the Cambridge site. In talking
23 with the project manager a couple of weeks ago, they
24 indicated Ohio is proceeding. You know, they have
25 just closed their first disposal cell and capped it.

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1 And they will be working on a second one.

2 So I think lessons learned again. We've
3 got parallel processes, how they analyzed it, again,
4 under the LTR as an agreement state. So I think the
5 idea of looking for case studies, lessons that help us
6 with our issues at our sites.

7 CHAIRMAN RYAN: I think also of Sheffield
8 and Beatty. Those are low-level waste sites that have
9 been closed and capped and finalized. I don't know if
10 that is too big or too complicated a situation, but
11 how they have done that, what their monitoring issues
12 are. There may be some fruitful thinking there.

13 West Valley, of course, you have
14 mentioned. And there are some closed commercial
15 disposal cells at that location.

16 DR. CLARKE: Mike, as Robert mentioned, a
17 lot of this has come out of their experience with mill
18 tailings sites and the way that program has been set
19 up. I think it would be good to maybe even kick it
20 off with that program. They have been doing annual
21 inspections and surveillance monitoring to offer ten
22 years or more at some of the sites. They probably
23 have the best database of anybody's.

24 CHAIRMAN RYAN: And you certainly have
25 some insight into the EPA side of performance

1 assessment in terms of what is working over time and
2 what needs attention. So yes, we are interested. I
3 think we can help put together something that would be
4 of benefit to you and us.

5 MR. JOHNSON: Okay.

6 CHAIRMAN RYAN: Jim, let me start with
7 you. Any comments or questions or --

8 DR. CLARKE: I had a couple of questions,
9 Robert. Following up on my own question earlier that
10 I think Mike alluded to, one of the challenges if you
11 have an engineered containment system that has to last
12 a long time, one of the challenges is going to be to
13 estimate up front what it is going to cost to maintain
14 that system.

15 I wondered if there is a plan to give the
16 licensees any help with that. I mean, do you include
17 replacement costs, your exceptional maintenance costs?
18 How do you get your arms around that considering that
19 if you set up a trust, it is just not going to cover
20 the costs you might really encounter down the road?

21 MR. JOHNSON: We've talked generally about
22 that in our meeting with Shieldalloy on this guidance
23 and recognize that it's a trade-off. How robust your
24 design of your engineered system is can maybe minimize
25 the reliance on maintenance. That was the concept

1 presented earlier. When you diminish how robust the
2 barrier is, that may require more reliance on
3 maintenance and repair, replacement, whatever, and,
4 therefore, the cost increase.

5 And so I think they understood that there
6 is a trade-off here and they have to make decisions
7 about how to design their facility for performance as
8 well as looking at the maintenance cost over the long
9 term and any repair if they feel that replacement of
10 parts of the cap, you know, would be something that is
11 expected or not.

12 That is why we sort of have favored. And
13 we will see how it plays out, you know. We have
14 favored this robust approach, like the mill tailings,
15 at least for the erosion control cover, because there
16 isn't a need for reliance on active ongoing
17 maintenance and repair. And so that simplifies the
18 picture. You know, maybe it is an oversimplification.

19 DR. CLARKE: There isn't yet.

20 MR. JOHNSON: We'll see. So I guess
21 personally I just feel like pushing on that concept
22 and its application to other cases. It may work in
23 some cases. It may not.

24 If erosion is really an issue at this site
25 to maintain that cover, if that is really important,

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1 then they should follow our guidance. If there is
2 some other issue, well, then it is a different
3 question.

4 DR. CLARKE: Well, the five-year renewal,
5 does that give an opportunity to revise your thinking?

6 MR. JOHNSON: The five-year renewal?

7 DR. CLARKE: As you gain experience with
8 the performance of the system as time goes on.

9 MR. JOHNSON: I think the five-year
10 renewal should look at, as I guess we said, the
11 effectiveness of the whole system, the controls,
12 institutional controls, as well as the engineered
13 controls. And any weaknesses that are identified that
14 hadn't been dealt with before are going to have to be
15 dealt with.

16 DR. CLARKE: You have an opportunity to do
17 that.

18 MR. JOHNSON: Right. And so I think that
19 will help with that, any unanticipated things that
20 happen, but part of their job I think is to analyze
21 what could happen at this site under the conditions at
22 the site.

23 DR. CLARKE: Yes. I just wondered if you
24 planned on giving them any analytical tools to help
25 them do that.

1 MR. JOHNSON: No. We don't have any plans
2 for giving them analytical tools. I think the first
3 thing, -- and maybe others in the audience might
4 comment -- the tools we talked about are just using
5 their sensitivity analyses and try different bare
6 components and which ones are important. And then
7 maybe you might change your reliance on those
8 components in your analysis.

9 For instance, if a particular barrier
10 fails by 10 percent or 50 percent or 70 percent, what
11 does it mean to the overall performance of the system?

12 I think Shieldalloy certain recognizes
13 that this is sort of why. There aren't any cookbook
14 answers out there that I am aware of anyhow. And so
15 they're kind of wrestling with this right now, too.
16 And their DP when they resubmit it will give us some
17 ideas of how they have tried to think about it and
18 approach it and what tools they have tried.

19 DR. CLARKE: Just one more.

20 CHAIRMAN RYAN: Sure.

21 DR. CLARKE: I'm trying to check my
22 understanding of your graded approach to institutional
23 controls. If you're in the higher risk category and
24 there's a requirement for durable controls, is there
25 any way to meet durable controls other than having

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1 federal ownership and control or state ownership and
2 control?

3 MR. JOHNSON: I wish I had my table in
4 front of me. I don't. I believe those were the
5 principal mechanisms because of the longevity and
6 because of the -- that is very consistent with the
7 mill tailings approach.

8 Like I said, we have learned. We have
9 been kind of copying off them, you know, using things
10 that are consistent with that regulatory approach,
11 which was to rely on state or federal -- it turns out
12 federal DOE, but, I mean, the states have an
13 opportunity to step up. So we have tried to stay
14 consistent with --

15 DR. CLARKE: For example, you have layered
16 or redundant controls in both definitions. And if
17 you're in the durable category that's layered, it
18 includes state government control.

19 MR. JOHNSON: Right.

20 DR. CLARKE: And then the others all look
21 to me to put you in the federal ownership and control
22 category through an LTC or something like that.

23 MR. JOHNSON: I guess my view would be
24 that state and federal, it could be either, I mean,
25 just like UMTRCA if you can work out an arrangement

1 where that might be agreeable and there is a
2 commitment by a state to do that kind of a role.

3 DR. CLARKE: Thanks.

4 CHAIRMAN RYAN: Sure. Ruth?

5 MEMBER WEINER: I'm a little concerned
6 about your rules for unrestricted use areas. You said
7 they can't be sold off piece-wise, keeping them
8 together makes a site more valuable. Isn't this
9 working against future sales? It seems to me you have
10 so many restrictions on unrestricted use that it would
11 be tough to find a buyer.

12 MR. JOHNSON: There's really only one
13 restriction, I think. And that restriction is you get
14 prior approval from NRC and you don't divide up the
15 site. Otherwise, you can use it for whatever purpose
16 you want.

17 MEMBER WEINER: Yes, but those two
18 restrictions along I don't know whether you have any
19 sense of how long it would take to get approval from
20 NRC and keeping the large area together, not selling
21 it off piece-wise. Then you have to look for a buyer
22 who wants a large area.

23 MR. JOHNSON: Okay. That's true.

24 MEMBER WEINER: So are you, in effect,
25 creating legacy sites?

1 MR. JOHNSON: I guess the approach that we
2 took was to prevent the small isolated eight-acre
3 piece of property that has no use or future use other
4 than because of the restrictions. And who will buy
5 that?

6 MEMBER WEINER: Well, I thought you were
7 referring to areas that were released for unrestricted
8 use.

9 MR. JOHNSON: Yes, but if you do allow
10 sale of those portions of the property, all or parts
11 of it, eventually you might get down to only the eight
12 acres. And in attracting a buyer for that, single
13 eight-acre with all the restrictions and things they
14 have to do may be more difficult than keeping the site
15 together.

16 CHAIRMAN RYAN: Ruth, let me offer you an
17 alternative view. I think I would take exactly the
18 opposite view for the reason that certainty about what
19 is expected; that is, this has got a license on it and
20 I am going to be the licensee, and there is a path
21 forward, would probably make me more interested in it,
22 say, from an industrial use, brownfield kind of
23 circumstance than the uncertainty of the licensee who
24 is trying to sell it, saying, "Well, I'm not sure what
25 the rules are, but we'll figure it out as we go

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1 along."

2 So I think that while it's not an ideal,
3 perhaps pristine site with nothing, no baggage,
4 attached, it's a whole lot better if its path forward
5 is determined through something like this and there is
6 a clear regulatory path and not.

7 Now, is there a risk or is there something
8 there to think about? Well, sure, there is, but at
9 least you've got as a buyer an understanding that
10 there has been some pedigree flushed out on what
11 exactly that shapes up to be.

12 So I see it just the opposite. I see it
13 as a positive to a potential buyer in an industrial
14 circumstance, rather than a negative.

15 MEMBER WEINER: Maybe so. I just had one
16 other question and a suggestion. You can probably
17 figure that you're going to get a request for a
18 backyard farmer scenario almost every time, either
19 from the stakeholders or from the state or both. So
20 you might just consider making that part a routine
21 part of the analysis.

22 MR. JOHNSON: I see.

23 MEMBER WEINER: It's just a suggestion.
24 That way you've answered that question up front. The
25 question I have is, have you had any interaction or

1 impact on the DOE decommissioning sites? Because they
2 have to go through a very similar process.

3 MR. JOHNSON: I can't say that we have had
4 any impact so far. I mean, you may be aware of --

5 MEMBER WEINER: Do you interact with them?

6 MR. JOHNSON: We have started interactions
7 with them. And we in September signed an interagency
8 agreement to assist DOE in their cleanup program,
9 their risk-based in-states program.

10 There are a number of tasks in that
11 agreement. And they include a lot of things that we
12 do and they do in common. A lot of the common issues,
13 long-term stewardship and modeling and scenario
14 development, are all issues that are identified for us
15 to work with DOE on at their request.

16 And we started this work by attending a
17 recent meeting in Chicago to kind of get a sense for
18 all the stakeholders' concerns with DOE's approach to
19 risk-based in-state cleanup. So our plans are to work
20 with DOE over the next few years and talk about how we
21 do things, talk about what guidance we have in these
22 areas that might have common issues, and do reviews at
23 the request of whatever they ask us to review.

24 So what I think is good about it is it is
25 beginning to exchange information on issues we have in

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1 common. And not only they can see how we're
2 approaching things, we can see how they're approaching
3 things.

4 And sharing that information may have an
5 influence, may have an impact. We'll see. I think
6 there is a lot of potential for it in the future, but
7 it's not altogether clear exactly what we are going to
8 be doing in the next few years. But I think it's a
9 good start. And then we have interest in working
10 together.

11 MEMBER WEINER: Thank you.

12 CHAIRMAN RYAN: Allen?

13 MEMBER CROFF: Yes. A couple of
14 questions. I would like to start with this Fansteel
15 example. Was the risk from that site without
16 institutional controls analyzed?

17 MR. JOHNSON: Yes. The site is not
18 proposing restricted release. It's proposing
19 unrestricted release. So there are no institutional
20 controls assumed or proposed.

21 MEMBER CROFF: Okay. But it's proposed
22 for industrial use?

23 MR. JOHNSON: That's right.

24 MEMBER CROFF: Were risks from residential
25 scenarios or other things analyzed there?

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1 MR. JOHNSON: I can't answer that, but,
2 Jim, can you or Mark?

3 MR. THAGGARD: Yes, I can answer that.

4 CHAIRMAN RYAN: Yes. Mark?

5 MR. THAGGARD: We did look at the resident
6 farmer scenario, kind of bound what the doses could
7 be.

8 MEMBER CROFF: And what did that number
9 come out to be?

10 MR. THAGGARD: I believe it was right
11 around 100 millirem.

12 MEMBER CROFF: Okay. And to continue down
13 that path, it is supposed to be an industrial use
14 scenario. What kind of mechanisms are put in place to
15 make sure it stays industrial use?

16 MR. JOHNSON: Mark?

17 MR. THAGGARD: Well, the thinking is if
18 it's release for unrestricted use, there would be no
19 mechanism. I mean, that is part of the risk that you
20 take in terms of trying to do the analysis, that you
21 have to try to take a best estimate on what you think
22 the land use scenario is going to be.

23 And that is one of the reasons that we
24 bounded the analysis to try to figure out in the worst
25 case if it reverted to something other than industrial

1 what the doses could be.

2 But any time you use a realistic scenario,
3 you would have maybe some small probability that some
4 other land use scenario could occur at the site. And
5 that is part of the risk that you're taking.

6 MEMBER CROFF: Okay. But I am assuming
7 there are like zoning regulations or something there
8 at this point.

9 MR. McKENNEY: Well, in this case, of
10 course, -- this is Chris McKenney from NRC -- we have
11 the discussions with the Port of Muskegon for the fact
12 that they are going to buy a portion of the property,
13 the fact that all of the area around it is pretty much
14 industrial except for on the other side of the river
15 so that there is a lot buying into the fact that the
16 likelihood of it being industrial is very high.

17 From a risk standpoint, your probability
18 of having a resident farmer or resident of any type is
19 relatively low. So going into making a risk
20 management decision and saying, "Well, I know what the
21 worst case scenario is. I know what the likely
22 scenario for a single dose is," then you can do some
23 relative weighting in risk management space to say,
24 "Will the public be protected?"

25 For the fact that the high risk, the

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1 unlikely scenario is still under 100 millirem or right
2 about 100 millirem, that is still within the dose
3 limit of the public dose limit overall.

4 MEMBER CROFF: I understand. I mean, in
5 many of these areas, there is sort of no perfect
6 answer.

7 MR. MCKENNEY: Right.

8 MEMBER CROFF: I mean, it's a balance.
9 But I wanted to understand how it worked at a site
10 like this.

11 A second question. This concerns the
12 five-year inspections. I have no right to expect you
13 to know the answer to this. Let me preface it. The
14 NRC is sort of signing up for five-year inspections
15 into the future of some of these sites. And so are
16 people who watch over RCRA sites, FUSRAP sites, and
17 the uranium mill tailings, and DOE sites.

18 Is there any idea of how many of these
19 things the country, if you will, the nation is signing
20 up for? And they seem to be sort of scattered all
21 over, I mean, organizationally scattered in many
22 places, the responsibility for these, including
23 states, of course.

24 MR. JOHNSON: I can't answer for the other
25 folks in the country. I can only say that we have 20

1 some odd mill tailing sites currently under DOE
2 stewardship. And there are probably maybe 20 more
3 Title II sites or so. And then literally right now we
4 have two sites and then West Valley.

5 So, I mean, we don't have many current
6 sites that we're aware of that are going to need this
7 other than those two or three. Of course, DOE may
8 have over 100 or so depending on how that sorts out.

9 But I'm not aware of the numbers in the
10 other programs to be able to answer your question.

11 MEMBER CROFF: Okay. Thanks.

12 CHAIRMAN RYAN: Just to help Allen a bit,
13 I think, too, that a number of the sites where there
14 is activity or action, it is really the licensees that
15 are decommissioning, rather than terminating under the
16 termination rule, leaving materials behind and need
17 the assessment.

18 Particularly in the agreement state level,
19 I would say there are a lot more folks that are trying
20 to just completely decommission a site and clean
21 everything up to the MARSSIM-type approach than leave
22 something behind. So there is a much bigger number
23 there, I would say.

24 MR. JOHNSON: When we did the LTR
25 analysis, we did ask the agreement states if they were

1 aware of any plans for restricted use across all of
2 their sites in their states. The only answer was Ohio
3 and this Shieldalloy Cambridge site. There were no
4 other sites that they were able to identify at that
5 time. That was maybe a year and a half ago.

6 So from the standpoint of agreement
7 states, our agreement states implement the LTR. There
8 was really only one site at that time that was
9 planning restricted use.

10 CHAIRMAN RYAN: A couple of questions that
11 struck me as I was listening to the discussion. On
12 the financial assurance requirements, I am always
13 reminded that sometimes people think things aren't
14 going to be as expensive as they turn out to be in
15 this arena. So, again, that's where I think getting
16 some of the actual expenses might be of great benefit.

17 The other is you mentioned earlier in your
18 presentation, Robert, about sites that half short
19 half-life material or shorter half-life material
20 versus sites that have source material that are
21 essentially unchanged from now on out into the future.

22 Is there a way to connect the two?
23 Because if a site, for example, had some of both, I
24 could see two things happening over time. One is that
25 there would be a much higher need for, say, control

1 and monitoring early on and then as time went on, some
2 kind of a decrease in monitoring and/or controls.
3 Perhaps it could go down based on the radioactivity
4 quantities that remain over time. So that you change
5 one, the financial insurance requirements, the
6 monitoring requirements, the oversight requirements,
7 and so on, as that degrades down.

8 So I just think that I would think about
9 -- that may be a rare case. I don't know. But, you
10 know, you might want to think about either during that
11 five-year inspection process or the materials that
12 have been left behind, that you allow for a systematic
13 reevaluation and decrease in control if that's
14 appropriate based on risk or updated dose calculations
15 or changes in use scenarios and so on and so forth.

16 So that might actually help in the
17 standpoint that you're not making an absolute decision
18 at an early stage, but, as Jim pointed out, you allow
19 for that reevaluation.

20 I think that's got two sides to it. One
21 is it allows for if things aren't going as expected
22 and they are going in a negative direction, you can
23 certainly address that through increased controls or
24 assurances or whatever. But if radioactive material
25 is decaying or everything is looking just dandy or you

1 don't need 100 wells but you need 50 or you don't need
2 10, you need 3, you allow for that to happen over
3 time.

4 I guess in any monitoring program, too,
5 it's a point of you take a sample to demonstrate
6 compliance. You meet some requirement for a
7 concentration determined in some way or another.

8 But the other part is that if, for
9 example, you are interested in groundwater, which I
10 guess east of the Mississippi would be a principal
11 type of monitoring, how are you going to figure out
12 how the environment is behaving? Is there a way to
13 not necessarily make a requirement for measure the
14 water level, too, instead of just getting the sample
15 so that you can build your information with a simple
16 addition or two from a system point of view? How is
17 the system behaving?

18 The next step in that is if you learn more
19 about the system, you can then do a little bit more of
20 a -- I don't want to say a PRA because I don't mean a
21 full-blown probabilistic risk analysis, but you can
22 better risk-inform the kinds of calculations that Mark
23 and Chris and others have talked about to really as
24 time goes on feel more comfortable that yes, we have
25 -- I know "bounding" isn't exactly the right word --

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1 we have properly assessed the risks.

2 Does that make sense?

3 MR. MCKENNEY: Well, the only concern
4 would be that it would defeat the number one purpose
5 of almost all of these, which is finality. Most
6 anything that has the potential that you would be
7 changing controls, changing the agreements on
8 financial requirements, or monitoring periods that
9 aren't up front agreed to at the point of license
10 termination, consistent with the fact that the LTC
11 doesn't involve actual termination, that that would
12 not be finality because you would always be opening
13 the door that the standards could change, all of a
14 sudden some other stakeholder could come in at some
15 point down the road if you are constantly opening the
16 door at every five-year review to better sharpen the
17 pencil. And so I think that there would be a lot of
18 reluctance on just that would be a -- I mean,
19 obviously there could be benefits from being able to
20 do that, but that would be a con that would be
21 mentioned.

22 I mean, one of the biggest concerns always
23 has been the reason that we have the issues with EPA
24 and us is that licensees think that it would be done
25 with cleanup of a site. And then EPA will make them

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1 clean up five years from now yet again because there
2 is no finality.

3 And so when we are trying to set up these
4 options, we are trying to look to see, balance
5 everything to the point that maybe it is not the best
6 approach, but finality is such a big key, important
7 part of the license termination rule.

8 CHAIRMAN RYAN: Yes, I understand the
9 balance point. I mean, it's a good case when you are
10 decreasing in radioactivity now. That's easy.
11 Everybody would like that.

12 MR. McKENNEY: But we would also have the
13 potential problem of the other site, which is that it
14 is always nice to be able to say that we could reduce
15 potentially the financial assurance requirements or
16 something, but then there is always the chance that
17 what would happen if we had to increase?

18 CHAIRMAN RYAN: Well, that is the tough
19 question.

20 MR. McKENNEY: See, the corporation would
21 be like they will be fine with you saying that we will
22 decrease the requirements in the future, but they
23 never want one that would shift to possibly --

24 CHAIRMAN RYAN: Well, maybe the strategy
25 is you set it at that level that satisfies the

1 long-term risk and the short-term risk and you don't
2 have an option to go up, you only have the option to
3 go down or stay the same. I mean, you could think
4 about it that way.

5 I guess I just think that a little bit
6 more of in-depth thinking about that financial risk
7 model and matching it up to the hazard over function
8 of time might be of value.

9 MR. JOHNSON: Well, I'll react a little
10 bit differently maybe.

11 CHAIRMAN RYAN: Sure.

12 MR. JOHNSON: Finality is important as far
13 as -- and I think the requirement of not requiring
14 more cleanup unless there is a safety, clearly
15 significant threat is important. But there is no
16 reason to follow up on your example of a mixed site,
17 a hypothetical mixed site with short-lived and
18 long-lived.

19 I mean, you know you have that already in
20 your planning stage. And so your DP could very well
21 -- in taking the tailored approach or the
22 risk-informed, tailored approach to controls, you
23 would recognize up front in your plans for monitoring
24 and maintenance that you have got maybe two types of
25 contamination.

1 And so maybe the controls on the
2 short-lived would only last for 40 years. And so your
3 amount of oversight or your amount of monitoring and
4 maintenance, you may predict that it will diminish
5 because one thing you do know is things do decay and
6 you can calculate the decay.

7 And so I think in the tailored approach,
8 you might be able to pull something like that off, but
9 you would plan it up front. And I think my reaction
10 is the five-year reviews, if there is something that
11 is happening, there will have to be mitigation to deal
12 with it if there is a significant threat.

13 CHAIRMAN RYAN: Yes. I know. And I
14 understand there are specific thresholds that you are
15 developing to address significant health risk
16 questions and so forth, but the fact of the matter is
17 that you have got an opportunity to improve your
18 knowledge of is this working.

19 MR. JOHNSON: Right.

20 CHAIRMAN RYAN: And I think that is
21 something to -- again, maybe I haven't hit on a
22 perfect example, but if you could build that into the
23 process, that is going to build confidence over the
24 long haul for everybody.

25 MR. JOHNSON: And the cost projections

1 that are maybe difficult, I think we realize that.
2 And that is why we are asking for stakeholder input on
3 them, too, you know, up front.

4 CHAIRMAN RYAN: And, again, to get back to
5 our discussion of potential ACNW working group
6 meetings, if we could grasp in the people that have
7 wrestled with that, either on the RCRA side or the
8 CERCLA side, or folks that have done the radioactive
9 material side of it, that would be I think a great
10 benefit to try and pull that knowledge together.

11 Yes, please, Jim?

12 DR. CLARKE: One thing. I think it we
13 could work over shorter time horizons, a lot of this
14 would go away. But the problem is the system has to
15 last hundreds of years or thousands of years and our
16 experience with these systems is maybe 10-20 years at
17 the most. So we are way beyond our experience in our
18 design and our planning.

19 I think to take this opportunity to
20 respond to Allen's question, there are over 1,000
21 CERCLA sites. Any CERCLA site that requires
22 institutional controls triggers five-year reviews. So
23 we are going to have several hundred probably of those
24 sites being reviewed every five years, but eventually
25 we will start to get some experience with these

1 systems and how they perform and how they degrade and
2 what planning horizons are appropriate. But right now
3 we're in the challenge as to up front estimate that,
4 get it right, and go forward because Chris makes a
5 very good point with finality.

6 CHAIRMAN RYAN: Yes.

7 DR. CLARKE: People do want finality.

8 MR. JOHNSON: I might just ask one more
9 thing. If you think about the proposals to review our
10 guidance and the other things and let us know so our
11 planning can incorporate it in a timely way and --

12 CHAIRMAN RYAN: Absolutely. And I think
13 what we were trying to do is organize any
14 information-gathering that would be helpful to you and
15 us and the review of your drafts in a way that made
16 that connection flow well. So I think we are wide
17 open to working on how that best comes together to
18 help everybody out in a timely way.

19 MR. JOHNSON: Or to review it in general
20 or focus on particular parts of it that you know is
21 sort of what your preference is.

22 CHAIRMAN RYAN: And, in fact, what really
23 is areas where you feel you would like to gather
24 information as well. Absolutely.

25 MR. JOHNSON: Okay.

1 CHAIRMAN RYAN: Sounds great. Well,
2 thanks very much for a -- I'm sorry. Mike Lee had a
3 --

4 MR. LEE: Yes. Just very briefly, a lot
5 of reference has been made to performance of barriers
6 and how you judge how long these things are going to
7 last. With Mark Thaggard here, he can remind you as
8 well that you may want to make reference or look into
9 the low-level waste PTP. There was considerable
10 discussion of how you evaluate barrier performance.
11 We used, the folks up in Research, in particular, in
12 their association with NIST, to look at concrete
13 performance.

14 So there may be some snippets of
15 information both in the guidance documents as well as
16 response to public comments you may want to look at.
17 That also applies to the performance of natural
18 barriers, such as earthen mounds.

19 My recollection is we also made reference
20 to a National Academy study which looked at the
21 performance of geosynthetics and bitumen covers for
22 shallow disposal facilities. That academy report I
23 think is still out there in the literature. You could
24 look at that, just as ideas as you think about
25 guidance in this area.

1 Does our reasonably foreseeable land use
2 assume preservation of institutional knowledge? Are
3 you assuming at some point that? Are you going to
4 deal with that in the guidance? You don't have to
5 answer now, but is that going to be articulated in
6 that regard?

7 MR. JOHNSON: Preservation of records for
8 sites like that, you mean, or --

9 MR. LEE: No. Institutional oversight, I
10 guess, for lack of a better word.

11 CHAIRMAN RYAN: So the town council knows
12 what is out there 100 years down the line, that kind
13 of thing.

14 MR. JOHNSON: No. It was like the
15 previous answer. No because you're not relying on
16 institutional controls, which in some definitions
17 includes records management and all.

18 MR. LEE: Sure. Well, that is just a
19 segue back into the significance of barrier
20 performance. And if you refer, as you well know,
21 Parts 60, 61, and 63 all at some point rely on
22 isolation to protect the public. So you may want to
23 make reference to that or at least consider that.

24 My recollection is thorium is geologically
25 pretty unique. Has thought ever been given just to

1 try to find a buyer for the thorium? I know that they
2 mine thorium sands in Australia and places like that.
3 As part of the --

4 MR. McKENNEY: Not for thorium. It mines
5 monozyme sands for titanium.

6 MR. LEE: Okay.

7 CHAIRMAN RYAN: And they mine garnet.
8 Thorium is always --

9 MR. McKENNEY: Yes. Thorium happens to be
10 more like just a waste product out there.

11 MR. LEE: All right. I just thought there
12 may be a simple way of dealing with it. Thank you.

13 CHAIRMAN RYAN: I'm sure these companies
14 have looked for buyers for a long time.

15 MR. McKENNEY: That's right.

16 MR. LEE: Okay.

17 CHAIRMAN RYAN: Any other questions or
18 comments? Latif, yes, please, sir?

19 DR. HAMDAN: Thanks, Mike.

20 Bob, just one clarification. In your
21 example of institutional control sites, you had the
22 concept of having sufficient financial assurance and
23 trust. But in the same slide, just one bullet down,
24 you left me with the impression that if there is ever
25 a bankruptcy, it may not be covered. I mean, the

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1 financial assurance may not cover a site reclamation
2 in case the licensee goes bankrupt.

3 So the question I have is, is this concept
4 of sufficient financial assurance sufficient to cover
5 cases of bankruptcies or not?

6 MR. JOHNSON: It is. And that is one of
7 the reasons why it is there and it is needed, that if
8 the owner licensee goes bankrupt, goes away, there is
9 a source of, an independent source of, funding to
10 carry on activities. And that is the purpose of that
11 trust fund. And the challenge is to determine if you
12 have got the right amount in there.

13 And then the five-year reviews, one of the
14 reasons for a five-year renewal is to check that
15 trustee and the sustainability of that trust.

16 DR. HAMDAN: And we know that the
17 terminate amount is really a challenge because of our
18 experience with uranium mill tailings sites, right?

19 MR. JOHNSON: Right. Yes, there's history
20 there I am aware of. Yes, you are right.

21 CHAIRMAN RYAN: One last quick question.
22 It's a follow-up to Latif's. If you identify a
23 high-risk operating site, are you going to try and get
24 them on the financial assurance track early? Have you
25 thought about any linkage between ultimate financial

1 assurance and high-risk operating site?

2 MR. JOHNSON: That's a good question. I
3 will think about it.

4 CHAIRMAN RYAN: It's something to think
5 about.

6 MR. McKENNEY: One of the options about
7 operating plants and decommissioning that is
8 considered is the fact that we may link the funding
9 requirements for decommissioning to activities that
10 are happening at the operating sites.

11 So if spills were to occur, they may have
12 to either immediately clean them up or take a hit on
13 their decommissioning funding right then. They would
14 have to increase their decommissioning funding for
15 potential cleanup later in the future.

16 MR. JOHNSON: And that's true --

17 MR. McKENNEY: And those are the things
18 that we will have to look through in the rule to see
19 how we can implement those sorts of things.

20 MR. JOHNSON: And Chris is right. One of
21 the subissues in financial assurance space was
22 indicators of higher cost of cleanup, but I think your
23 question may be even different. It's like it's not
24 indicators in that things have happened that you're
25 going to have to pay more for, but it's like the

1 potential for things to happen.

2 MR. McKENNEY: There might be different
3 levels of decommissioning funding for different
4 classes of facilities maybe.

5 MR. JOHNSON: Yes.

6 MR. McKENNEY: There may be --

7 CHAIRMAN RYAN: If you take, for example,
8 highly mobile liquid forms, long-lived material, I
9 mean, those are all the risk indicators in the right
10 circumstances, but I just wondered if you guys had
11 thought about the linkage between a high-risk
12 operating site and the financial assurances that may,
13 in fact, come along later.

14 MR. McKENNEY: That may be a very good
15 option to look at.

16 MR. JOHNSON: Yes. We'll write that down
17 and put it into our considerations.

18 CHAIRMAN RYAN: And, again, it is not that
19 I would want to foist extra costs on folks, but if
20 they are heading toward a substantial accumulation of
21 costs, it is better to get that up front and plan for
22 it than it is to have it hit you all of a sudden, I
23 think.

24 MR. JOHNSON: I think our emphasis
25 initially was for those sites and activities that we

1 think might be a high potential. Then you want to
2 have procedures put in place, if they aren't already,
3 to monitor and to report and to watch it more
4 carefully so it doesn't happen.

5 CHAIRMAN RYAN: Right.

6 MR. JOHNSON: But we should think about
7 your suggestion as well.

8 CHAIRMAN RYAN: Okay. Well, thank you.
9 Any other questions or comments?

10 (No response.)

11 CHAIRMAN RYAN: Thank you all very much.
12 We are adjourned until 1:00 o'clock. Thank you very
13 much.

14 (Whereupon, at 11:42 p.m., the foregoing
15 matter was recessed for lunch, to
16 reconvene at 1:00 p.m. the same day.)

A-F-T-E-R-N-O-O-N S-E-S-S-I-O-N

(1:03 p.m.)

CHAIRMAN RYAN: Okay. Our afternoon agenda calls for two items. One is a consolidated issue resolution status report. Second after that will be a review and discussion of the ACNW 2005 action plan. And that will conclude our afternoon activities.

If Neil Coleman comes in, we might get started on the igneous activity letter. If not, we will take that up tomorrow morning. But we may start that if get here on time to do that.

MEMBER CROFF: He's still working on it as we speak.

CHAIRMAN RYAN: He's working on it as we speak. And he may or may not.

Our first speaker up is you.

DR. RUBENSTONE: Okay. Thanks.

14) CONSOLIDATED ISSUE RESOLUTION STATUS REPORT

DR. RUBENSTONE: I am Jim Rubenstone. I am part of the High-Level Waste Repository Safety Division here at NRC. And I am going to be speaking to you today about the integrated issue resolution status report.

Just as an introduction, this is an

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1 updated report that was issued in 2002 for the first
2 time. And we are currently updating it. The report
3 is not quite finalized yet. We expect that it will be
4 done within the next few weeks, and we will be sending
5 it to DOE, the stakeholders. And that includes ACNW
6 will be getting a copy of the report as well.

7 This report has contributions from almost
8 all of the technical staff in the Division of
9 High-Level Waste Repository Safety and at the center.
10 So I would like to acknowledge all of those
11 contributions and not name them individually.

12 What I will be giving you today is an
13 overview of the report, what it is, a brief history,
14 the role it is going to play in our review of a
15 potential license application for Yucca Mountain, and
16 some examples of what topics are included in it.

17 The purpose is fairly straightforward.
18 The IIRSR gives a status of prelicensing interactions
19 between the Department of Energy and the NRC on Yucca
20 Mountain. These are predominantly technical
21 interactions. So this is a technical information
22 report.

23 It's a fairly large document. It's going
24 to be probably in excess of 800 pages when it's done
25 plus appendices. So it summarizes where we stand on

1 interactions.

2 Next slide, please. Just to run down how
3 this came about, the key technical issues were first
4 identified by DOE and NRC in 1996. In the following
5 year, the NRC began issuing status reports for
6 individual issues. And as that process matured over
7 the next few years, it became clear that these issues
8 were interdependent and that they could be better
9 served by having an integrated report that tied all of
10 them together.

11 So the first IIRSR, as I said, was
12 published in 2002 as part of a NUREG series. It
13 covered both preclosure and postclosure topics,
14 although at the time most of the interactions had been
15 predominantly on postclosure topics. The current
16 report is an update of that NUREG report.

17 Next slide, please. The IIRSR is part of
18 the NRC's tool kit for reviewing the potential
19 repository license application. And it's the
20 technical information tool from that kit. It
21 summarizes information that comes predominantly from
22 three sources: documents produced by DOE, technical
23 interactions between the two groups, -- and those are
24 mostly technical changes, Appendix 7 meetings -- and
25 independent analyses done by NRC staff and center

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1 staff on these issues.

2 In order to prepare the report, we had to
3 freeze the information at a point. So this report is
4 current through March of this year.

5 The structure of the report follows the
6 review methods that were given in the Yucca Mountain
7 review plan. And the Yucca Mountain review plan, of
8 course, derives its structure from the Part 63
9 requirements. And we have incorporated into the
10 report the risk information from the risk insights
11 baseline report that was published or prepared earlier
12 this year. This risk information helps us inform what
13 sorts of information is significant for repository
14 performance and to what level of understanding you
15 need to develop that information.

16 Next slide, please. It is important to
17 remember that we are still in prelicensing space. So
18 the IIRSR is an informational report. It doesn't
19 reach any decisions. It is not the safety evaluation.
20 It doesn't speak to regulatory compliance. Those are
21 things that will be done during the license review.

22 Next slide, please. I am going to go
23 briefly over some of the areas that are covered in
24 this report without going into great detail. As I
25 said, it's a fairly dense and heavy report. I'm not

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1 going to have time to cover everything in detail.

2 There are three broad areas we can break
3 things up into. The first is the general programmatic
4 and administrative topics, which is kind of a
5 catch-all term. And then the real meat of the report
6 is in the preclosure safety analysis and the
7 postclosure performance assessment. So for the next
8 couple of slides, I will give some examples of topics
9 that are covered in each one of these areas.

10 The first one, as I said, is the catch-all
11 things, like in general information site description.
12 And, as I said, the report reflects the information
13 that was developed during the interactions between DOE
14 and NRC. So some of these areas, like general
15 information, we didn't have specific meetings on
16 general information.

17 So these areas in the report are
18 necessarily a bit spare; whereas, in other areas,
19 there has been pretty extensive interaction between
20 DOE and NRC. For example, quality assurance for the
21 past couple of years, we have been having quarterly
22 meetings on that. So that section is much more
23 detailed.

24 Next one. The preclosure safety analysis,
25 some of the general areas that we cover should be

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1 familiar: identification of hazards, initiating
2 events, and event sequences, including the
3 probabilities of those events occurring and their
4 consequence analysis.

5 And then the other part of the safety
6 analysis is the identification of the structures,
7 systems, and components important to safety and
8 looking at some detail of the design of those SSCs.
9 This should be familiar to anyone who has been through
10 NRC's work on other major engineered facilities. It
11 follows that sort of pattern. We see the same thing
12 in the YMRP.

13 Next slide. Following permanent closure,
14 the way that the system is assessed is through a
15 performance assessment model. As I said, most of the
16 interactions between DOE and NRC have been in this
17 area. And this covers system description; the
18 multiple barriers requirement, which is in Part 63;
19 again, a scenario analysis and event probability,
20 which is part of the risk triplet approach to it.

21 And then the real, the heart and the
22 longest sections of the report are the 14 model
23 abstractions of performance assessment. And these are
24 familiar topics that had been discussed many times,
25 things like degradation of engineered barriers,

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1 mechanical or disruption of the engineered barriers,
2 climate and infiltration. And there are 14 topics.
3 I won't list them all. They're on the first backup
4 slide if we get to them.

5 Can we just go back for a sec? The other
6 thing I wanted to say is that the model abstractions
7 in the IIRSR, each of the 14 is reviewed following the
8 5 review methods that are outlined in the YMRP. And
9 those are on the second background slide. They cover
10 model integration, data and model justification, the
11 uncertainty in the data, the uncertainty in the model,
12 and the support for the model. So those are the
13 areas, again, from the YMRP. As I said, each one of
14 the model abstractions is reviewed following that
15 pattern.

16 So now we can go to the next. Just to
17 summarize what I have said, this is a broad overview.
18 The IIRSR is an informational document on interactions
19 between DOE and NRC. The information is current
20 through March of this year. We will be publishing it
21 as a revision of NUREG-1762, but as soon as the report
22 is finalized, we will be providing informational
23 copies to DOE, the stakeholders, and the committee.
24 And it's one of our review tools to be used along with
25 the review plan and the risk insights baseline report

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1 in reviewing a potential license application.

2 And the note is just to remind us that
3 even though we froze that information in March, we are
4 continuing to review material submitted by DOE. I
5 believe they made all of their submittals that they
6 intend to do this year. And we're providing feedback
7 to them on these submittals, and we will be until the
8 potential license application is filed. Our current
9 schedule calls for having that completed by the end of
10 this calendar year, that feedback.

11 So that's it. And I'm happy to answer any
12 questions.

13 CHAIRMAN RYAN: Thank you. I guess the
14 footnote caught my attention. How are we doing on
15 resolving KTIs and so forth? We had seen a couple of
16 charts of that type before, and we talked about a bow
17 wave, I guess, four or five months ago. How is the
18 bow wave looking?

19 DR. RUBENSTONE: Everything is in.
20 Correct me if I'm wrong, but I believe everything that
21 DOE expected to submit is now in. It didn't follow
22 the exact schedule. There were always things sliding
23 around.

24 CHAIRMAN RYAN: Sure.

25 DR. RUBENSTONE: But they are now all

1 in-house. We are reviewing them. We have been
2 reviewing them. And last month we sent our response
3 letter to DOE that stated that we will get feedback to
4 them on all of these issues.

5 Our focus is going to be putting the
6 highest priority on those items that have been
7 identified as having the highest risk significance.
8 So we're doing those first, but we intend to get
9 feedback on all of them to DOE before the end of year.

10 CHAIRMAN RYAN: It sounds like the bow
11 wave went away a bit.

12 DR. RUBENSTONE: Well, the bow wave came
13 in, and it loshed over us. And we stood up and kept
14 working. So it's --

15 CHAIRMAN RYAN: That's great. Questions?

16 DR. RUBENSTONE: Anything else?

17 MEMBER WEINER: Yes.

18 CHAIRMAN RYAN: Ruth?

19 MEMBER WEINER: I have just a couple. Is
20 NRC staff using this PCSA tool that was developed by
21 the center to identify hazards and so on?

22 DR. RUBENSTONE: At the time this report
23 was prepared, the PCSA tool was just being wrapped up.
24 So we're going to be using that, I believe. And I
25 don't want to get into the details because that is not

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1 my area of specialty. But we have gotten the final
2 PCSA tool.

3 I believe for this report, the PCSA tool
4 was not specifically used to develop that because of
5 the time frame on which we developed it. I think the
6 PCSA tool was just delivered in its final form in
7 September, if I'm not mistaken. And much of the
8 development of this report preceded that. But we do
9 have that PCSA tool now.

10 MEMBER WEINER: I'd be very interest in
11 your future assessment of its usefulness and ease of
12 use, how well it works because I think it is a very
13 interesting approach to preclosure safety analysis.

14 The other question deals with one of your
15 backup slides. It's the 14 model abstractions.

16 DR. RUBENSTONE: Right.

17 MEMBER WEINER: You list as one of the
18 model abstractions volcanic disruption of the waste
19 package. Does that include chemical interaction
20 between the magma and anything in the waste packaging
21 material, the cladding, and so on? Does it include
22 the chemical interaction?

23 DR. RUBENSTONE: It includes it in the
24 broad sense, but, as I understand it, DOE is not going
25 into any details on that and is adopting a

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1 conservative approach, what they are claiming is a
2 conservative approach.

3 Again, this review is in process. And the
4 final review will depend on what is in the LA. But my
5 understanding is that they will be basically stating
6 that there will be no change in the chemical form of
7 the spent fuel due to interactions.

8 And, again, that's my understanding as
9 current of the DOE approach. And that is certainly
10 subject to their change in how they are doing it.

11 MEMBER WEINER: I would just encourage you
12 to take a look at that, as I'm sure you will.

13 DR. RUBENSTONE: I agree that it is worth
14 looking at.

15 MEMBER WEINER: That's it.

16 CHAIRMAN RYAN: Mike?

17 MR. LEE: Yes. As you have noted, the
18 title of this report is "Issue Resolution Status
19 Report." And if a member of the public were to pick
20 up this report and read it, would they get a sense for
21 the status of issue resolution as it's defined? I
22 mean, if the Combustion asked the Committee, "What is
23 the status of issue res.," I mean, if they --

24 DR. RUBENSTONE: Right. One of the
25 appendices -- and I didn't reproduce it here because

1 it's 50 pages long -- is a line by line status of each
2 agreement. So that information is in there.

3 The main body of the report is written
4 more in a narrative style about the technical
5 information. So the focus is on the technical
6 information. It's not a checklist of issues.

7 MR. LEE: Right. But a reader can review
8 the document and get a sense as to where --

9 DR. RUBENSTONE: I think that information
10 is --

11 MR. LEE: -- issues may remain open or --

12 DR. RUBENSTONE: Yes. That information is
13 summarized in the appendix A.

14 MR. LEE: Thank you.

15 CHAIRMAN RYAN: I guess just to follow up,
16 that is really the \$64,000 question, I guess. You
17 have said that everything has been submitted and you
18 plan to review everything by the end of the year. So
19 if my memory serves me right, all of the previous
20 graphs of things that are hanging all over the LA time
21 frame into the next year are things that are
22 previously planned to do that, but nothing is left
23 hanging you had planned to do this year. Is that a
24 fair summary?

25 DR. RUBENSTONE: I'm going to walk

1 carefully here. What we have said is that we will
2 provide feedback to the Department of Energy on
3 everything they have submitted. We are not
4 specifically going into the open/closed.

5 CHAIRMAN RYAN: Ah. That's the \$64,000
6 question.

7 DR. RUBENSTONE: Right. And I may want to
8 defer to management and some of our --

9 CHAIRMAN RYAN: Well, I guess from my
10 perspective, that's the interesting question. I mean,
11 this is an interesting update, but the real question
12 is, what is open and what is closed and what is in
13 front of us and what is behind us?

14 DR. RUBENSTONE: I mean, getting back to
15 what Mike said, I think in reading the report, we have
16 not tried to -- let me put it this way. Areas where
17 we think DOE has provided information that covers the
18 issue are identified. And questions that the NRC has
19 raised are also identified.

20 MR. LEE: I guess what you are saying is
21 in reading the report, the reader would have to do
22 some type of analysis, I guess, to kind of walk that
23 fine line or read between the lines, I should say, to
24 get those answers.

25 DR. RUBENSTONE: We're not trying to make

1 it cryptic, but --

2 CHAIRMAN RYAN: You've done that.
3 Frankly, I don't know where you are.

4 DR. RUBENSTONE: I guess I want to go back
5 and emphasize that we are not reaching any sort of
6 finding in this and that this is an information
7 update. We're not saying that such and such an issue
8 is now closed and we have decided that it is covered
9 because that is not the purpose of the report and that
10 is not the role of NRC in the prelicensing arena.
11 It's basically to generate information such that the
12 license application is the best that it can be.

13 MR. STABLEIN: Could I add to that?

14 DR. RUBENSTONE: Yes.

15 MR. STABLEIN: Maybe I could provide a
16 little more clarity as to where we stand because I
17 think I know what you are looking for. The fact of
18 the matter is that all of the agreements will not be
19 closed at the time of the license application. I am
20 not sure what the number will be that remains open,
21 but it will be more than a handful. It will be
22 substantial.

23 And we put letters in the public record
24 back to the State of Nevada about the fact that they
25 don't all have to be closed when DOE comes in with the

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1 license application. What we have said in those
2 letters is for the ones that are hanging open at that
3 time, we will review the license application on its
4 own merits. And that's when we make licensing
5 determinations.

6 So as far as this document is concerned,
7 we consider it contains an awful lot of valuable
8 technical information that will help the staff be
9 ready to review the license application. It does not
10 bring closure to all of the 293 agreements that were
11 crafted with DOE.

12 CHAIRMAN RYAN: Sure. And I appreciate
13 that clarification. In previous meetings, though, we
14 have actually seen that chart and understood a little
15 bit more clearly than we're seeing it today. I'm just
16 wondering why the change. What is going on?

17 MR. STABLEIN: Well, Jim's presentation
18 wasn't actually intended to deal with the agreements
19 themselves and kind of is emphasizing that this
20 document is more than an attempt to summarize the
21 agreements.

22 When we crafted the key technical issues
23 in '96, we forged the nine major issue areas. And
24 what this document does is provide all of the
25 technical information that we have gathered together

1 over the last eight years on those big key technical
2 issues.

3 And while the individual agreements are
4 discussed to some extent, this document really goes
5 above and beyond what we have been running day to day
6 in our program as our technical teams work on the
7 individual agreement responses and our reviews of
8 those and the letters that we're sending back to DOE.

9 If somebody wanted to see the entire
10 record on the agreement responses, they would need to
11 take this document and capture the letters we have
12 been sending back to DOE as a complete body of work on
13 the agreement responses.

14 If you are interested in the updated chart
15 on the agreements themselves, I have Dan Rom working
16 on that. And we can provide that to you probably
17 before the end of the meeting.

18 CHAIRMAN RYAN: Okay. That would be a
19 nice adjunct to kind of complete the picture here
20 because I think you have given us a snapshot of your
21 report without any of the detail. And that is good,
22 but in going to the other end of it, if we see that
23 updated chart, once we read the report, we can see the
24 beginning and the end. That would be real helpful.

25 DR. RUBENSTONE: Thank you, King.

1 MR. LEE: One other question.

2 DR. RUBENSTONE: Yes, Mike?

3 MR. LEE: Earlier you made reference to
4 the license application toolbox or review toolbox or
5 whatever.

6 DR. RUBENSTONE: Yes.

7 MR. LEE: You have the IIRSR. You have
8 the risk insights report. You have your PA capability
9 and insights from that. And you have the Yucca
10 Mountain review plan. Are there any other tools in
11 the toolbox that are going to contribute to that
12 review capability? And if so, what are they? And
13 when might they be available?

14 DR. RUBENSTONE: I think you have hit the
15 big ones. I mean, in my mind, certainly the PC
16 underlies everything for certainly postclosure. So
17 that is a very broad tool. But the three legs, as I
18 envision it, are the IIRSR, the Yucca Mountain review
19 plan, and the risk insights baseline report. Ruth
20 mentioned the PCSA tool, which is another one with
21 preclosure.

22 MR. LEE: Sure.

23 DR. RUBENSTONE: There is some more
24 in-depth risk assessment that is being done currently
25 to update some of the aspects of the risk insight

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1 report and go into some more detail. If there is
2 anything else that I am missing? Like I said, those
3 are the big ones. And then we have a number of other
4 accessory tools that we're using.

5 MR. LEE: Thank you. Snap-ons.

6 DR. RUBENSTONE: Yes. There you go.

7 CHAIRMAN RYAN: Okay. Any other questions
8 or comments? Yes?

9 MR. STABLEIN: Could I just add Mitzi
10 Young from the General Counsel's office, who is here,
11 reminds me to mention that the chart that we will
12 provide you today on the agreements will be right up
13 to date; whereas, as Jim has mentioned, this report
14 here goes to March '04. So the chart will be more
15 up-to-date.

16 CHAIRMAN RYAN: That's very helpful. That
17 way we can get a snapshot of what has happened in the
18 last number of months and see how that is working.
19 Great.

20 DR. RUBENSTONE: Mike, that summary table
21 that I referred to that is in the appendix is actually
22 intermediate between March and today.

23 CHAIRMAN RYAN: That's okay.

24 DR. RUBENSTONE: And it goes into more
25 detail, but King will get you the one that is up-to-date.

1 CHAIRMAN RYAN:

2 That's great. Terrific. Thank you.
3 Anything else? Going once, going twice.

4 (No response.)

5 CHAIRMAN RYAN: Okay. Thank you very
6 much. We appreciate it. Okay. Next on our agenda is
7 our 2005 action plan. We're not taking any new
8 information. So we can go off the record at this
9 point. And I think we're concluded on the record
10 today. Is that correct? Okay. Yes. We're concluded
11 on the record today. And we'll start back up.

12 Well, actually, John, we're writing
13 letters tomorrow. So yes, we do need to have the
14 recorder at about 8:30. Okay. I'm sorry. We're
15 done. Thank you very much.

16 (Whereupon, at 1:28 p.m., the foregoing
17 matter was adjourned.)

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CERTIFICATE

This is to certify that the attached proceedings
before the United States Nuclear Regulatory Commission
in the matter of:

Name of Proceeding: Advisory Committee on


Nuclear Waste

154TH Meeting

Docket Number: n/a

Location: Rockville, MD

were held as herein appears, and that this is the
original transcript thereof for the file of the United
States Nuclear Regulatory Commission taken by me and,
thereafter reduced to typewriting by me or under the
direction of the court reporting company, and that the
transcript is a true and accurate record of the
foregoing proceedings.



REBECCA DAVIS
Official Reporter
Neal R. Gross & Co., Inc.



United States Nuclear Regulatory Commission

Accomplishments and Plans for License Termination Rule Analysis Actions

Advisory Committee on Nuclear Waste
October 20, 2004

Robert L. Johnson, Senior Project Manager
Division of Waste Management and Environmental Protection
U.S. Nuclear Regulatory Commission
Washington, DC 20555



United States Nuclear Regulatory Commission

Outline

- Background
- Accomplishments in FY 2004
- Plans for FY 2005-2007
- Site-specific examples of implementation
- Potential ACNW reviews



United States Nuclear Regulatory Commission

Background on Past LTR Analysis Activities

- LTR analysis of 8 issues, 5/02/03
- ACNW briefing on 8 issues, 5/28/03
- Commission approval of actions for 8 issues, 11/17/03
- LTR analysis of intentional mixing of soil, 3/01/04
- Commission approval of actions for intentional mixing, 5/11/04
- ACNW briefing on intentional mixing, 7/20/04



United States Nuclear Regulatory Commission

Accomplishments in FY 2004

- Commission paper on intentional mixing of soil (SECY-04-0035)
- Commission approval of recommendations (SRM-SECY-03-0069 and SRM-SECY-04-0035)
- Regulatory Issue Summary
- Site-specific implementation for institutional controls and realistic scenarios



United States Nuclear Regulatory Commission

Regulatory Issue Summary 2004-8, 5/28/04

- Informs licensees and stakeholders of LTR Analysis
- Identifies opportunities for stakeholder comment; invites early feedback
- Summarizes staff analyses of 9 issues
- Includes Commission approval and comments from SRM
- RIS is final action for 2 issues
- Commission approved recommendation to begin implementing approved options for institutional controls and realistic scenarios



United States Nuclear Regulatory Commission

Summary of Commission Approval/Comments

- Institutional controls:
 - Approved recommendations: risk-informed graded approach, options for NRC monitoring and enforcing role (legal agreement, Long-Term Control (LTC) license)
 - Requested public comments on draft guidance be shared with Commission
- Unimportant quantities: approved recommendation that 0.05 weight percent is not to be used as a decommissioning criterion
- Separate U/Th unrestricted release standard: approved recommendation not to develop a new standard



United States Nuclear Regulatory Commission

Summary of Commission Approval/Comments

- On-site disposal standard:
 - Approved recommendations of using current practice of a "few millirem" and up to 100 millirem with sufficient financial assurance
 - Commission added option of 25 millirem without financial assurance for short-lived radionuclides
- Relationship between LTR and control of disposition of solid materials
 - Approved recommendation of including description in the RIS
 - Requested staff to clarify the reduction in conservatism in LTR analysis and impact on off-site removal of material after license termination
- Realistic Exposure Scenarios
 - Approved recommendation of using reasonably foreseeable land use



United States Nuclear Regulatory Commission

Summary of Commission Approval/Comments

- Changes to financial assurance to prevent future legacy sites
 - Approved recommendations; specific comments to be addressed in rulemaking/guidance
- Changes to licensee operations to prevent future legacy sites
 - Approved recommendations for operating facilities to minimize contamination and increase licensee monitoring and reporting for high-risk sites
 - Approved enhancement of NRC inspection and enforcement of high-risk operating sites
 - Commission requested that guidance include "how much is enough" monitoring
- Intentional mixing
 - Approved current practice of mixing to meet WAC
 - Approved mixing to meet LTR criteria in limited circumstances, case-by-case



United States Nuclear Regulatory Commission

Planned Implementation Actions in FY 05-07

- Revise decommissioning guidance in NUREG-1757
- 4 issues: institutional controls, onsite disposal, realistic scenarios, intentional mixing
- Stakeholder involvement
 - Explore Agreement State participation in development
 - Early stakeholder input/workshop
- Draft guidance for public comment in 9/05
- Final guidance in 9/06



United States Nuclear Regulatory Commission

Planned Implementation Actions in FY05-07

- Inspection and enforcement procedures for operating sites
 - Enhance monitoring, reporting, and minimize contamination
 - Develop risk-informed and performance-based approach
 - Identify high-risk operating sites and activities
 - Develop revised inspection and enforcement procedures by 9/05



United States Nuclear Regulatory Commission

Planned Implementation Actions in FY05-07

- Rulemaking and supporting guidance to prevent future legacy sites
 - Changes in financial assurance
 - Changes in licensee operations
 - Proposed rule and draft guidance for public comment in 9/06
 - Final rule and guidance in 9/07



United States Nuclear Regulatory Commission

Example of Implementing Institutional Control Options at Shieldalloy

- Potential restricted use site in Newfield, NJ; large volume of U/Th slag
- Example of risk-informed graded approach and Long-Term Control (LTC) license
- Interim guidance in 05/04; input to draft guidance in FY 2005
- State of New Jersey letters and Chairman response
 - Objection to restricted use and LTC license
 - Chairman response
 - LTR allows restricted use option
 - Federal oversight enhances long-term control



United States Nuclear Regulatory Commission

Key Concepts in Interim Guidance for NRC's LTC License

- Current license amended, NOT terminated
 - Continued NRC role
 - Maintains Agency records in single docket file
- All LTR restricted use requirements must be met
- LTC license provides legally enforceable and durable institutional control
- Licensee role: access and land use controls, surveillance, maintenance, monitoring, reporting, records retention, stakeholder involvement
- NRC role: oversight to assure licensee controls are effective, including inspections, five-year renewals, enforcement, maintaining records



United States Nuclear Regulatory Commission

Key Concepts in Interim Guidance for NRC's LTC License

- Maintain current site boundary with both restricted and unrestricted use areas
 - Allows reuse of unrestricted area (60 acres); maintains value
 - Restricts use on smallest area (8 acres)
- Sufficient financial assurance and trust
- Maintaining ownership and control
 - NRC prior approval of ownership/control transfers
 - NRC enforcement, trustee use of contractor, court appointed custodial trustee
 - Value of unrestricted area is an incentive to future owners



United States Nuclear Regulatory Commission

Key Concepts in Interim Guidance for NRC's LTC License

- Risk-informed graded approach to institutional controls
 - Durable institutional controls for long hazard duration
 - Tailor controls to mitigate potential failure of institutional controls and engineered barriers that are significant to meeting dose criteria
- Engineered barriers
 - Evaluate contribution to compliance, long-term effectiveness, degradation
 - Do NOT rely on ongoing active maintenance and repair
 - Encourage robust engineered barriers to simplify and minimize reliance on maintenance/repair (NRC's guidance in NUREG-1623 for erosion protection)
- Finality



United States Nuclear Regulatory Commission

Examples of Implementing the Realistic Scenario Approach

- Currently implementing at 11 decommissioning sites
 - Fansteel
 - Kiski Valley Water Pollution Control Authority
 - Shieldalloy
 - AAR
 - Michigan Department of Natural Resources
 - SCA
 - DOW Chemical
 - Cabot Reading
 - West Valley
 - Big Rock Point
 - Rancho Seco
- Completed examples serve as lessons learned



United States Nuclear Regulatory Commission

Fansteel Example of Realistic Scenario Approach

- Example of industrial scenario as reasonably foreseeable land use
- Staff review supported licensee's industrial scenario
- State of Oklahoma challenge industrial scenario and proposed resident farmer
- Atomic Safety Licensing Board upheld staff's decision for industrial scenario



United States Nuclear Regulatory Commission

Kiski Valley Example of Realistic Scenario Approach

- Example of onsite and offsite use
- NRC staff dose assessment
 - Reasonably foreseeable land use scenarios
 - Onsite in place, no action
 - Removal offsite disposal (position of Pennsylvania)
 - Less likely uses assessed to bound the uncertainty of future land use
 - Recommendation to Commission for no further decommissioning action
- Commission approved staff's application of realistic scenario approach



United States Nuclear Regulatory Commission

Potential ACNW Reviews During FY 2005

- Draft guidance on institutional controls, realistic scenarios, and intentional mixing
- Risk-informed approach to identify high-risk operating sites and activities to focus inspections and enforcement



Integrated Issue Resolution Status Report

An Update of the Report Issued in 2002

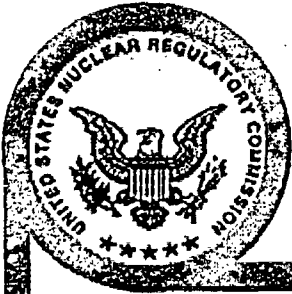
James L. Rubenstone, Ph.D.

301-415-5019 jxr5@nrc.gov

Division of High Level Waste Repository Safety

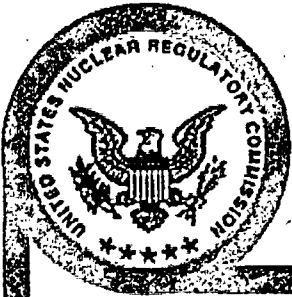
U.S. Nuclear Regulatory Commission

154th Meeting of
Advisory Committee on Nuclear Waste
October 20, 2004



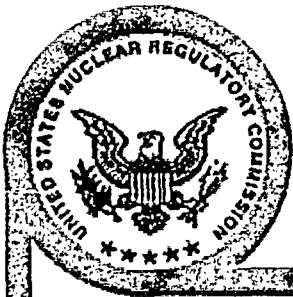
Purpose

The Integrated Issue Resolution Status Report (IIRSR) provides information about the status of prelicensing interactions between the U.S. Department of Energy and the U.S. Nuclear Regulatory Commission concerning a potential high-level waste geologic repository at Yucca Mountain, Nevada.



A Brief History

- **Key Technical Issues were formally identified in 1996.**
- **Issue Resolution Status Reports were prepared and updated for individual issues beginning in 1997.**
- **As Issue Resolution progressed, the value of an Integrated Report became apparent.**
- **The first IIRSR was published as NUREG-1762 in July 2002.**
- **The report covered both preclosure topics and postclosure issues.**
- **The current report updates NUREG-1762.**



The IIRSR as a Review Tool

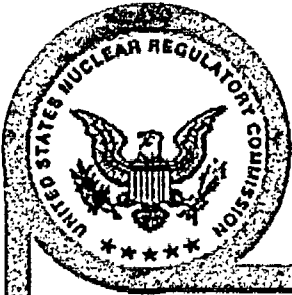
- **Summarizes technical information from:**
 - DOE documents
 - Technical interactions between NRC and DOE
 - Independent analyses by NRC staff
- **Information current through March 2004**
- **Structure follows review methods in the Yucca Mountain Review Plan (YMRP)**
- **Incorporates risk information from the Risk Insights Baseline Report (RIBR)**



The IIRSR in Prelicensing

**The IIRSR is informational,
not decisional.**

- **It is not a safety evaluation.**
- **It does not address regulatory compliance.**



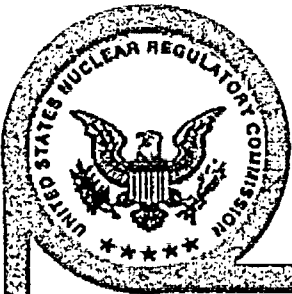
Areas Covered in the IIRSR

- **General, Programmatic, and Administrative Topics**
- **Preclosure Safety Analysis**
- **Postclosure Performance Assessment**



Example Topics in the IIRSR

- **General, Programmatic, and Administrative Topics**
 - General Information
 - Site Description
 - Performance Confirmation
 - Quality Assurance



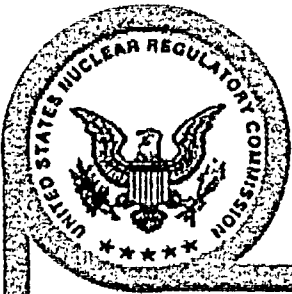
Example Topics in the IIRSR

- **Preclosure Safety Analysis**
 - Identification of Hazards, Initiating Events, and Event Sequences
 - Consequence Analysis
 - Identification of Structures, Systems, and Components (SSC) Important to Safety
 - Design of SSC Important to Safety



Example Topics in the IIRSR

- **Postclosure Performance Assessment**
 - **System Description**
 - **Demonstration of Multiple Barriers**
 - **Scenario Analysis and Event Probability**
 - **Model Abstractions (14 areas)**



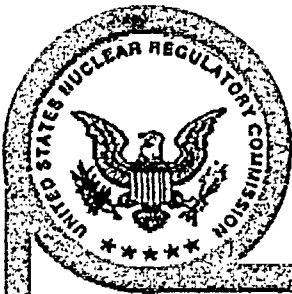
Summary of the IIRSR

- Informational document
- Current through March 2004*
- Will be published as revision of NUREG-1762
- Will be used along with the YMRP and RIBR in reviewing a potential License Application

** The NRC is continuing to provide feedback to DOE on their Key Technical Issue Agreement submittals until a potential License Application is filed.*

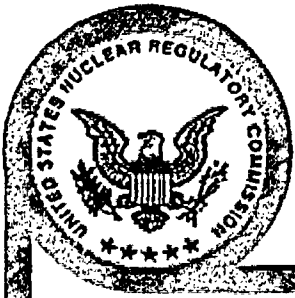


Backup Slides



Fourteen Model Abstractions for Performance Assessment

- Degradation of Engineered Barriers
- Mechanical Disruption of Engineered Barriers
- Quantity and Chemistry of Water Contacting Waste Form and Engineered Barriers
- Radionuclide Release Rates and Solubility Limits
- Climate and Infiltration
- Flow Paths in the Unsaturated Zone
- Radionuclide Transport in the Unsaturated Zone
- Flow Paths in the Saturated Zone
- Radionuclide Transport in the Saturated Zone
- Volcanic Disruption of the Waste Package
- Airborne Transport of Radionuclides
- Concentration of Radionuclides in Groundwater
- Redistribution of Radionuclides in Soil
- Biosphere Characteristics



Review Methods for Model Abstractions

- **Model Integration**
- **Data and Model Justification**
- **Data Uncertainty**
- **Model Uncertainty**
- **Model Support**

from Yucca Mountain Review Plan, NUREG-1804